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STEEL

The Magazine of Metalworking and Metalproducing

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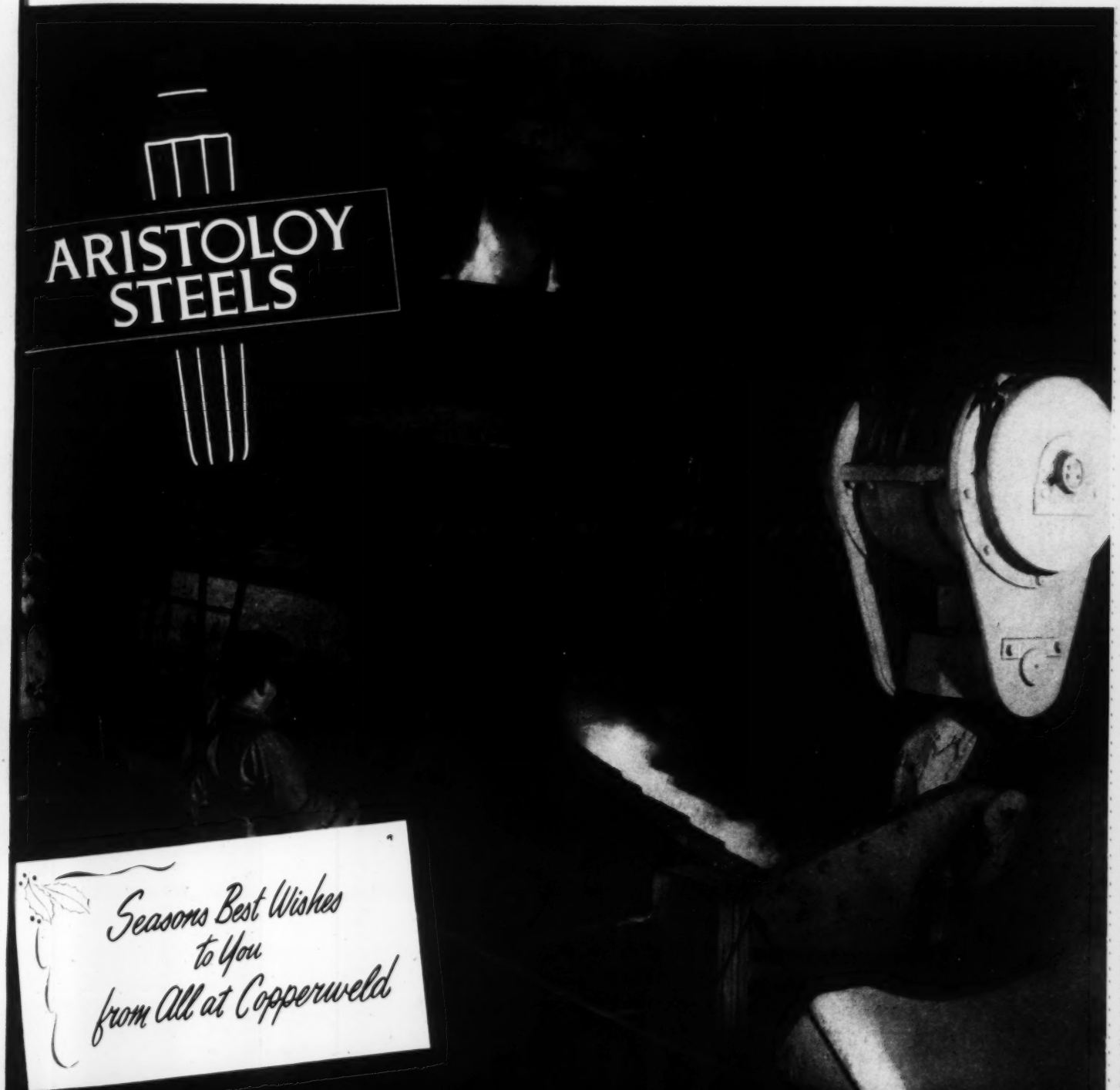
ARISTOLOY STEELS



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STEEL

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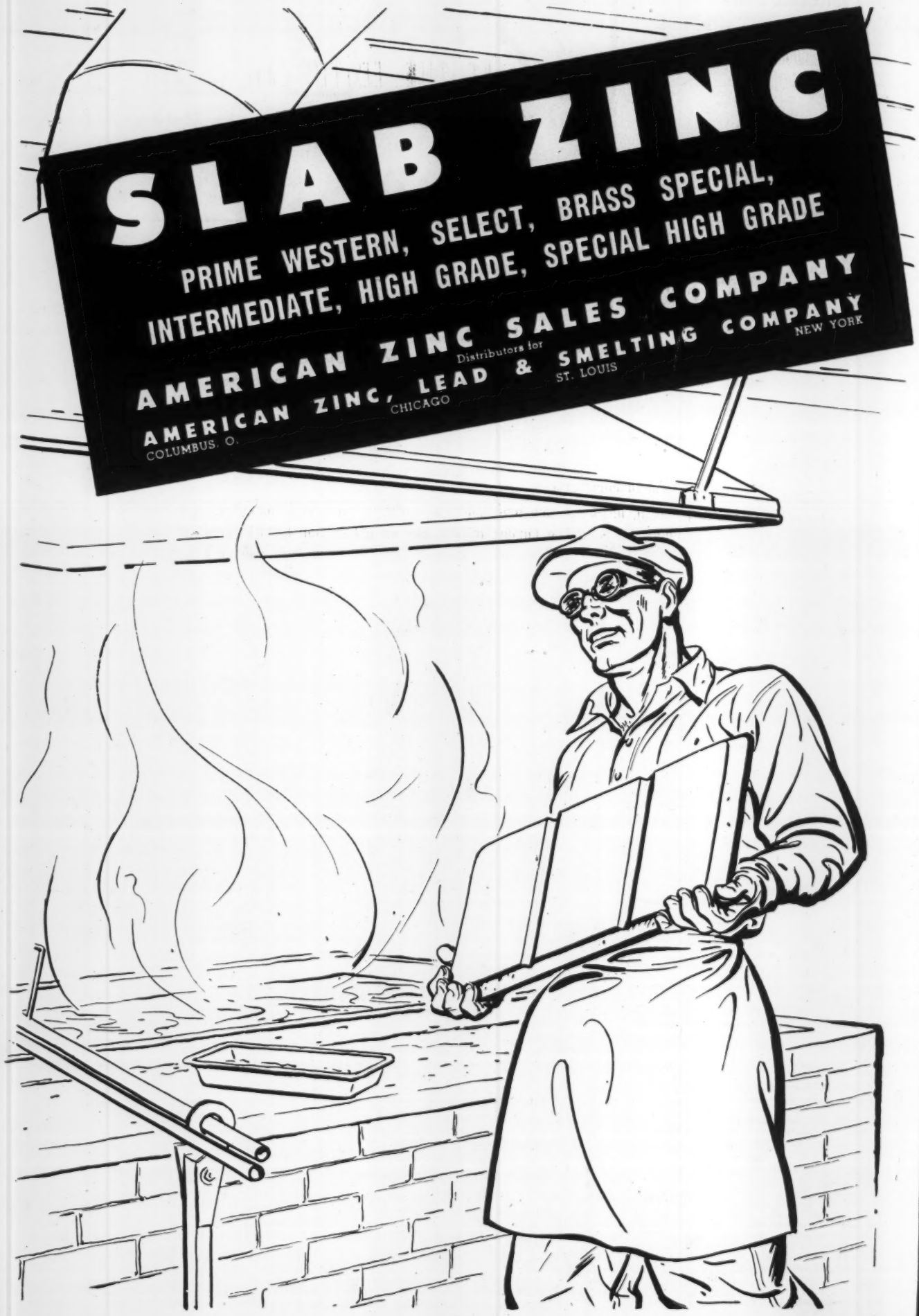
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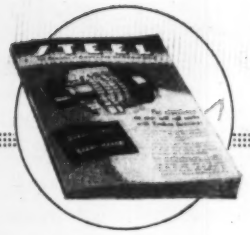

December 25, 1950

Our Main Hope

As the year-end approaches, we find our nation in a difficult spot. Of all the free countries of the world, ours was the only one with physical resources and spirit not dangerously dissipated by the ravages of war which could undertake the responsibility of leadership toward peace. We assumed that role. We were liberal in our help to allies sorely in need of it. When the enemy went beyond "cold war" tactics, we abandoned the appeasement of the last two hapless decades and met the aggressor with armed resistance. Under extreme difficulties we escaped a Dunkirk at Pusan and rebounded with an offensive which brought us a spectacular victory—which victory was nullified by the entrance of hordes of "volunteers" from another satellite of the enemy.

At the present moment, we are holding our own in Korea against tremendous odds. Also, we face the threat of attacks at other points throughout the world—attacks against which we are the nation relied upon to provide the major defense.

Confronted with this dire prospect, we have come belatedly to our senses. We are discarding reluctantly ideas of politics and business "as usual." We will cross the threshold of the new year with a realistic grasp of the seriousness of our plight.

Ahead in early 1951 will be periods of demoralizing confusion. The transition from our free and reckless way of abundant life to one of restrictions, frustrations and sacrifice will not be easy. The die is cast. We are in an officially declared state of emergency. We don't like it, but it's here and we must make the best of it.

Fortunately for all of us, this is the kind of situation which sooner or later will bring out the best instincts of the people. The very gravity of the hour will attract talent to posts that have been held by incompetents. The advent of able men will breed confidence. As confidence is restored, the esprit de corps of the millions will rise. Long before the end of 1951, we will be proud of a nation that is pulling unitedly for a definite, common objective.

This unity of purpose is our main hope. We must go all out to achieve it.

* * *

DON'T DISCOUNT AUTOS: Don't get too excited about the price roll backs on certain automobile and oil companies. These are initial and tentative efforts of government officials to place road blocks against inflation until such time as they can organize a staff that can deal with the problem effectively. These first acts admittedly are weak and futile gestures. They are makeshift expedients intended to delay price increases until the Washington authorities can organize facilities more pretentious than a desk, a telephone and a stenographer.

Meanwhile the victims of these preliminary actions are being subjected to discriminatory edicts which can play havoc with almost every phase of efficient industrial operation. Production schedules, sales policies, dealer relationships, union contracts and many other important business commitments are jeopardized.

A factor overlooked by the Washingtonians is the recently intensified dependence of the American public upon automobiles and busses. Migration to the suburbs has made the jalopy and bus modern substitutes for commuter and long-haul rail service. If Washington clamps down

(OVER)

too hard on highway transportation, it will make it difficult for needed employees to get to work.

Leon Henderson was the official who belatedly discovered the potent role of the automobile in World War II. Who will be the Christopher Columbus in the present emergency?

—pp. 25, 39

* * *

IDENTIFYING STEELS: West Coast airframe manufacturers have become concerned about the waste of time and material caused by the lack of a uniform system of marking alloy steels. A check of the color coding of 17 types of steel used by six different aircraft companies showed no uniformity in any single analysis. For instance, for SAE A-4130 steels each mill used its own multi-colored marking; no two were alike.

With mobilization on a grand scale approaching, now would be an opportune time to do something about uniform standards for identifying steel. Color coding is not the solution, because there are not enough colors or simple combinations of colors to take care of the more than 5000 types of steel in current use. If, as has been suggested, some form of continuous ink stamping is the best solution, then it would be advisable for steel producers and important consumers to get together on suitable standards as soon as possible. Here is a project that would benefit everybody concerned. —p. 54

* * *

MARGIN ON THE REDS: Metalworking industries of Western Europe look forward to record-breaking activity in 1951 and beyond. The Korean war and the decision to speed mobilization in Europe make it likely that demand —domestic and export—will tax output for an indefinite period.

A year ago competent authorities estimated that total demand for European steel in 1952 would amount to 68.2 million net tons against an estimated output (excluding Russia) of 77 million tons, leaving a surplus of 8.8 million tons. Today, in view of the present outlook, it is estimated that production by 1953 may mount to 79.2 million tons and that defense requirements will leave little, if any, surplus.

Interesting is the comparison of 1950 steel output behind and outside the iron curtain. Russia, Czechoslovakia, Poland, Hungary and Rumania will produce about 34.3 million tons of ingots. Western European nations will turn out about 56.4 million tons—a substantial margin of 22.1 million tons. —p. 35

WRAPS OFF REACTORS: Governments of the United States, United Kingdom and Canada for the first time have released technical information, photographs and drawings of low-power nuclear reactors used for research purposes. The objective is to speed the training of technicians for atomic energy development. Incidentally, an insight into the extreme caution taken in the details of construction and shielding of these low-power units gives a hint as to what these problems involve in building full-scale reactor plants for the production of atomic weapons.

It would be well for all industrialists as well as technicians to study this recently released information. You will gain a new appreciation of the extent to which stainless steel, aluminum, cadmium, lead, concrete, high-purity graphite and other materials play dominant roles in the construction of these reactors. —p. 57

* * *

RUNAWAY EXPANSION: This nation's steel expansion program is snowballing rapidly. In the week's news are new companies which will build facilities at Owensboro, Ky., and Hazleton, Pa.; another substantial new steelworks at tidewater in New Jersey, the identity of which cannot be revealed at this writing; a major increase in steel ingot, pig iron and coke capacity of Youngstown Sheet & Tube Co. at its Indiana Harbor Works; an increase of 50 per cent in the steelmaking capacity of Atlantic Steel Co.; and an expansion program for Lukens Steel Co.

These additions, plus those previously announced, mean that a phenomenal volume of construction is scheduled for completion in a brief period. The peak burden on materials, equipment and services may cause government authorities, who not long ago were criticizing steelmakers for failure to expand enough and in time, to ask them to slow down. Stranger things have happened. —p. 28

Holiday Greetings

In the face of world conditions that are the antithesis of everything for which Christmas stands, we extend best wishes for the holiday season and for the new year.

E. C. Shaner

EDITOR-IN-CHIEF

News Summary

PRICES— Mandatory price controls on nearly everything are inevitable, although they won't be effective until Economic Stabilization Agency gets the manpower and authority to back its orders (pp. 25, 39). That appears clearly out of the tangle of moves and counter-moves that ESA made last week on a voluntary plan to roll back most prices to Dec. 1. Don't be confused by the loud talk now coming from the federal agency. ESA's bark is worse than its bite—thus far . . . Steel companies have been asked to submit their price data as of June 15 and Dec. 15 to ESA.

CMP— To launch a Controlled Materials Plan or not. That is a question on which defense production authorities blow hot and cold (p. 26). Consensus at the moment is that CMP will not be ordered until the need becomes more apparent and that then several months will be required to get it working efficiently. July 1 may see the start of a full-fledged CMP.

WATCH US GROW— The East Coast will get another large steel plant to be located on the Delaware river below Philadelphia (p. 28). This is in addition to the facilities being constructed by U. S. Steel at Morrisville, Pa. Other sections of the country also are getting important new capacity. Youngstown Sheet & Tube is spending $90 million at East Chicago. Two new companies will build plants, one in Kentucky and one in eastern Pennsylvania. The expansion program now includes 12 blast furnaces, in addition to more than large steel ingot and coke facilities.

HELP IN STEEL— Declining steel exports and climbing imports may help steel consumers in 1951 (p. 37). Exports are now at about 250,000 tons a month, less than half the monthly shipments in 1949. Imports are up to 240,000 tons a month, nearly double the 1949 monthly average.

TROUBLES AHEAD— A record production year draws to a close but the next few months pose many problems for businessmen (pp. 42-44). Controls and directives are plaguing metalworking executives but defense orders haven't blossomed with the declaration of a national emergency. Steel payrolls were the highest ever in October but construction awards in November continued to slide downward. Chicago purchasing agents say demand tapered further in November even though employment and backlogs are still high and deliveries of raw materials are slow.

SYNTHETIC FUELS— Private companies are considering the establishment of commercial-scale plants for the production of synthetic fuels (p. 27). If these plans mature, the demands for steel and equipment will be large.

EUROPE LOOKS AHEAD— Western Europe expects a record industrial production year in 1951, because of the Korean war (p. 36). The Schuman plan and nationalization of British steel are two other factors that will affect the course of industry in the next 12 months. Major threats to peak output are scarcities in labor, coal and iron and steel scrap . . . Russia and its satellites increased industrial production in 1950, but as much as West Europe did.

HERE AND THERE IN INDUSTRY— Westinghouse will build three plants for its new electronic tube division (p. 30) . . . National Lead has leased buildings and site for a possible titanium plant in Nevada (p. 31) . . . A $500 million atomic energy plant (p. 31) will be built near Paducah, Ky., when Congress appropriates the funds . . . E. J. Hanley is new president of Allegheny Ludlum Steel; Clark W. King is executive vice president . . . Harvey Machine Co., Torrance, Calif., will build a new aluminum plant near Kalispell, Mont., with annual capacity of 144 million pounds. Plant will be in operation by mid-1952.

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Price Controls Creak into Gear

The voluntary program has no teeth in it because ESA has insufficient organization and authority to back its orders. Wage curbs lag

"WE KNOW business men will be asking us a lot of questions about price controls." So says an economist of the Economic Stabilization Agency. His remark may prove to be the year's classic understatement.

He was referring to the "fair standards" set forth in last week's ESA action clamping a "voluntary" freeze on all prices as of Dec. 1. His statement touched on one of five pricing conditions likely to arise.

Transition — That first condition will be a state of bickering, charge, counter-charge and confusing pricing regulations as we move toward full industrial mobilization. That was developing already as on one day last week ESA called for voluntary rollbacks of all prices to Dec. 1 levels, but on the next asked 250 big firms to give seven days' notice before increasing their quotations.

International Harvester Co., one of the companies that complied with the rollback request, did so even though it was "not clear" what "fair standards" mean. ESA says that the major point in its standards stipulates that no manufacturer may raise prices—with a few exceptions—if his net profits before taxes are equal to or larger than his average net dollar profits before taxes during 1946-1949.

What We're Headed for—The "voluntary" phase of the current pricing regulations can't last too long. A second pricing condition certain to develop eventually is mandatory controls on nearly all quotations. We may get mandatory controls fairly soon, but they won't be effective—a third condition in the pricing picture—until ESA builds up its administrative staff. It has a 235-man staff now. The old OPA had 20,000 price employees on its payrolls at the peak.

ESA now is talking loudly, but hasn't much to back up its current regulations. There's no legal punishment yet for non-compliance. One metalworking man says: "I think ESA is being deliberately confusing to cover up its lack of real authority. It's trying a psychological club to make as many people as possible hold the price status quo until things clear up."

Evolving — While things clear up, gray and black markets will get a head start, a fourth feature of pricing conditions likely to develop in the months ahead. A fifth feature will be a substantial lag in wage controls behind price controls. Sen. Homer E. Capehart (Rep., Ind.) charges the administration is failing to comply with the law in imposing price ceilings without taking immediate action on wages, too.

He brought to the attention of the Senate the section of the Defense Production Act of 1950 which gives the President power to put ceilings on prices. Part of that provision states that the President "at the same time shall issue regulations and orders stabilizing wages, salaries and other compensation." Cyrus Ching, chairman of the Wage Stabilization Board indicates that no firm plan for stabilizing wages in any industry is yet ready.

Concerned — In case of industry price freezes, most metalworking men want wage freezes, too, but with reservations. They don't want the relative labor stability disturbed. They fear that wage freezes would upset the calm, particularly if improvement and cost-of-living increases provided for in many contracts are voided.

What will or can be done by Washington to minimize the danger of a labor upheaval in case of wage freezes? Nobody yet knows.

More Price Meetings Held

Last week Price Stabilization Director Michael DiSalle held closed meetings with industry groups representing the American Iron & Steel Institute, the Institute of Scrap Iron & Steel and the National Association of Waste Material Dealers.

New Powers Aid Defense

Emergency proclamation gives Truman the power to negotiate contracts, give risk insurance

THE PRESIDENT'S declaration of emergency gives him two new powers that will help speed industrial mobilization and defense ordering.

The government may now negotiate for defense contracts without the time-consuming advertising for bids required normally. The Secretary of Commerce is authorized to provide war-risk insurance.

Delegated Authority—Biggest improvement made by the executive action is in provision for substantially

MR. DiSALLE STARTS FIGHTING FIRES OF INFLATION
. . . can he put out the blaze?

greater delegation of contracting authority to the armed services than has heretofore been possible at procurement office levels of the government. Contract negotiation will permit regional offices and headquarters departments of armed services procurement branches to conclude orders faster and in greater volume. Advertised bid methods, required by law until the emergency proclamation, are slow and cumbersome.

Three other powers Mr. Truman does not yet have will probably be granted by Congress to speed mobilization. One is a law to help out defense producers who have been hard hit by rising prices. The President asks for a law giving the government authority to modify existing defense contracts where clear evidence exists that because of the mobilization program prices have risen since the orders were placed.

More Agencies—A second power would permit the President to set up new defense agencies to handle mobilization problems. A third power would put indemnity clauses in contracts calling for hazardous work which might bring plant damage.

NPA Drafts Machinery Men

National Production Authority drafted three industry men into its machinery division. New chief is Marshall M. Smith, former president, E. W. Bliss Co., Canton, O. Acting chief of machine tool section is Col. P. L. Hauser, International Harvester Co., Chicago. Herbert L. Tigges, executive vice president, Baker Bros. Inc., Toledo, O., is adviser and consultant on metalworking machinery. William L. Beck, Commerce career man, who was chief of machinery division, is now deputy chief.

All are in Temporary T Bldg., telephone STerling 9200. Rooms and telephone extensions: Mr. Smith, Room 2134, Exts. 4550 and 4688. Messrs. Hauser and Tigges, Room 2131, Ext. 3463.

Tool Steel Section Established

David Carson announces creation of a new unit in the iron and steel division known as the tool steel section of which Felix Kremp, Crucible Steel Co. of America, is chief. Mr. Carson has drafted Charles Brooks, Luria Bros., Lebanon, Pa., to serve under Marvin Plant as the assistant chief of the iron and steel scrap section.

They can be reached through the same room and telephone number reported for other iron and steel division section heads—3814A Commerce Bldg., STerling 9200.

Deny CMP Imminent

NPA officials doubt that full fledged program will be possible before mid-year

CONTROLLED Material Plan revival is not imminent, National Production Authority spokesmen say. Contrary to many reports in the metalworking industry, NPA officials contend a new CMP will not be ordered until the need for such a program becomes more apparent. Then, they say, several months will be required to organize and to do the preparatory work to make it function. They now see July 1 as the earliest date for complete CMP.

Meanwhile, the NPA iron and steel division has allocated 10,118 tons of steel monthly through the first quarter for constructing Canadian ore carriers. Earlier, 8000 tons monthly was allocated for Canadian freight cars.

Oil Program May Be Pared—At least a month will elapse before the NPA will act on the petroleum industry's steel requirements program. The stated requirements are being screened and indications now are that somewhat less than the 12 million tons requested for 1951 will be allowed.

Mine Requirements Studied—Mine requirements also are being studied, with particular reference to mine car needs.

Allocations for construction of new diesel locomotives and repair of existing locomotives are under consideration. This program totals 70,000 tons monthly.

Plate Supply Better—The plate supply situation is slightly improved because a substantial portion of the allocated tonnage is being rolled on strip mills, even though the strip mills have not been completely converted for plate rolling.

NPA denies it has any plans for curtailing civilian consumption of pig iron. There are no controls of pig iron and none are contemplated immediately. Supplies are tight and the situation is being watched closely.

NPA Extends Aluminum Base

Certain base period adjustments permitted during December under Direction 1 to the NPA's aluminum use order will be continued in the first quarter of 1951.

The action provides for these three types of adjustments:

1. If new business operations were commenced or a new product was manufactured or produced during or after the base period, these percentages are applied to the average use in October and November for the new purposes—January, 80 per cent; February, 75 per cent; and March, 65 per cent.

2. Where changes were made in products during or after the base period which required more aluminum than was previously used to maintain the same unit output, a determination must be made as to how much aluminum would have been consumed on an average monthly basis if the products had been manufactured in accordance with the changed designs. To that adjusted figure these percentages are applied to determine the permitted use—January, 80 per cent; February, 75 per cent; and March, 65 per cent.

3. If production or manufacturing operations were shut down for more than 15 consecutive calendar days during the base period, a person may exclude from his base period the month or months in which the shutdown occurred.

Tin Consumption Curtailed

Tin consumption for nonmilitary uses will be cut 20 per cent beginning Feb. 1. In an amendment superseding its Order M-8, NPA ruled that materials containing 1.5 per cent or more tin may be used for civilian purposes in January at a rate of 100 per cent of the rate of use during the first half of 1950 and 80 per cent of that rate during February and March.

Renegotiation: "Best Method"

Countering much prevailing business opinion, the Business Committee on National Policy, National Planning Association, sees renegotiation as "the best method yet devised for preventing excessive profits and high costs on defense business without discouraging expansion of production and the efficient use of manpower and materials."

The committee finds the present law and procedures should be strengthened. Provisions "are inadequate because they do not apply to all defense orders placed by all government agencies and they automatically exempt too many contractors and subcontractors from renegotiating prices charged to the government."

Report of the business committee, with six recommendations for a stronger renegotiation law, may be had at 15 cents by writing the association at 800 21st St. N. W., Washington 6.

Steel for Fuel Plants

Commercial production of synthetic fuels planned by several private companies

A LONG-PROMISED new market for the steel and steel fabricating industries may be opened up as part of the defense program.

Attracted by the progress made by the Bureau of Mines in developing processes for the manufacture of synthetic liquid fuel, several private companies have planned commercial-scale plants. They are under consideration by the Interior Department which, under the Defense Production Act, can assist this new industry by paying premium prices for its products, guaranteeing loans to provide capital, and recommending fast amortization.

Big Steel User—Requirements of this industry will be large; a coal hydrogenation plant capable of producing 15,000 barrels of liquid fuel daily takes about 100,000 tons of steel, mostly in fabricated form. The contemplated plants would qualify not only for their liquid fuel output, but for their yield of by-products.

The plants under consideration would increase by an estimated 25 per cent the production of benzene, toluene, phenol, cresoles, xylenes, xylenols, etc. And the kind of fuel used in jet engines, the Bureau of Mines thinks, can be most cheaply produced from oil shale.

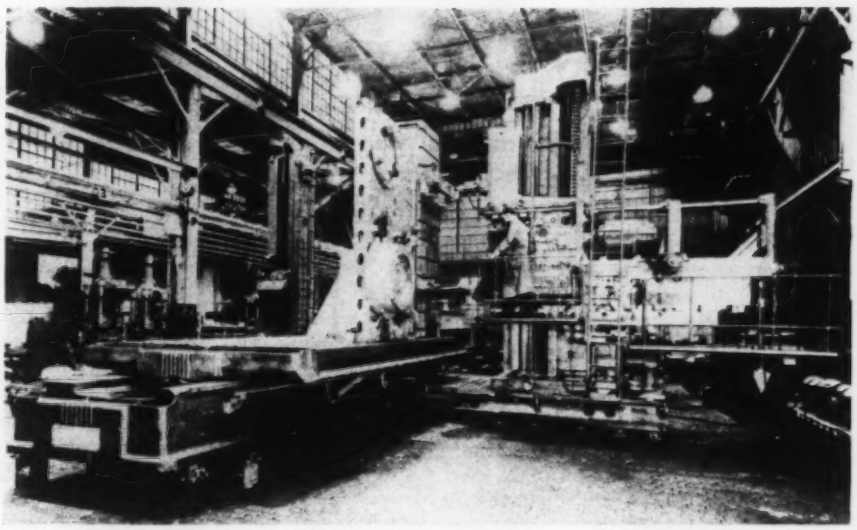
Gas, Coal or Shale—The first such commercial synthetic fuel plant, that of Carthage-Hydrocol Inc. at Brownsville, Tex., will go into production shortly. This will operate on natural gas. The projected plants, the Interior Department feels, should be operated on coal or oil shale to conserve natural gas.

Bureau of Mines estimates that, allowing credits for the value of the by-products, refined gasoline can be produced from oil shale and coal, respectively, at 7.3 and 10.8 cents per gallon. Selling prices would have to be somewhat higher to allow a reasonable profit.

Croning 'Know-How' Pool

The government may direct automakers working on the Croning or shell molding process to pool their know-how in the interest of national defense.

Now, companies which are furthest along in their development of machinery and applications for the German casting method are being hush-hush about their progress. Picture taking is banned and suppliers have been prohibited from making any mention of the automotive parts which are being made on pilot installations.



DESTINATION: EUROPE—An example of the machine equipment sent to Western Europe under the Marshall Plan is this large horizontal boring, drilling and milling machine built by Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., for Renault Motors Co. near Paris. It is equipped with General Electric 20-horsepower, 10-horsepower and 3 horsepower amplidyne feed drives. The GE electronic tracer automatically machines steel dies to the exact shape of wooden models. Here you see the tracing head mounted above the milling spindle and following the surface of a pattern while the milling cutter below reproduces the same form in the die steel

High Employment Holds

Nonfarm employment in November showed little change over the previous month except for seasonal factors, says the Department of Labor's Bureau of Labor Statistics.

Metalworking industries had slight gains in ordnance, primary metals, machinery (except electrical), electrical machinery, and instruments. Minor declines occurred in transportation equipment because of model change-overs in several auto plants.

Sustained by rising business expenditures for plant and equipment and the continuing volume of consumer expenditures, manufacturing production and employment were slightly below the postwar record reached in October.

Trailer Makers Need Steel

America's truck-trailer operators will need 89,979 new trailers in 1951 to fulfill the day-to-day demands of the increasing traffic resulting from the nation's defense effort.

That information, based on a survey of trailer manufacturers, was contained in a statement of requirements submitted to James K. Knudson, Defense Transport administrator, by Truck-Trailer Manufacturers Association, Washington. To produce the 89,979 trailer, the manufacturers say the need 321,201 tons of steel. Other needs are 69,539,000 pounds of aluminum and 1,540,000 pounds of copper and copper-base alloys.

The trailer manufacturers' statement was presented with an overall vehicle requirements program by the American Trucking Associations totaling 620,000 trailers, trucks and truck-tractors held to be necessary by motor carrier operators to meet transportation demands next year.

Machine Tool Shipments Soar

The index on machine tool shipments hit 110.9 in November, the best since August, 1945, says National Machine Tool Builders' Association. The figure compared with 100.9 in October.

GM Division Gets Defense Job

Ternstedt Division of General Motors Corp. has been awarded an initial defense contract for fire control instruments.

The instruments will be made by Ternstedt in a section of the Detroit Transmission Division plant of GM on Plymouth road near Middle Belt road in Detroit. Tooling for the job is under way and production will start soon. From 1500 to 2000 hourly and salaried employes will be required for the job. Most of those will be new employees. In World War II Ternstedt was a large producer of precision aircraft instruments.

Steel Expansion Program Grows

Another East Coast mill slated for New Jersey. Youngstown launches $90 million program at East Chicago. Other expansions near announcement stage

THE EAST COAST likely will get another big steel plant. That will be in addition to the one projected by U. S. Steel at Morrisville, Pa. The new plant will be located in New Jersey on a 2200-acre site.

While steel and equipment circles buzzed over reports of the new seaboard plant, as yet unconfirmed, more parts of the 10-million-ton-plus steel expansion program continued to fall into place.

Last week details on a $90 million expansion at East Chicago were revealed. Smaller programs throughout the country, including plants by at least two new companies, are nearing construction stage.

Green River Steel Corp. hopes to be producing electric furnace steel at Owensboro, Ky., within a year. Hazleton Steel & Tubing Co. will build a plant at Hazleton, Pa.

Still to be announced are several large programs, on which some protective orders for equipment have been placed. Financing and final decisions on equipment are holding up announcements of these.

Youngstown Grows West

YOUNGSTOWN Sheet & Tube Co. is undertaking a $90 million expansion program at its Indiana Harbor Works, East Chicago, Ind. Pig iron capacity will be increased 500,000 tons, coke capacity 430,000 tons and open-hearth ingot capacity by 1,225,000 tons, including tonnage from four furnaces now building.

A substantial portion of the expansion will be covered by certificates of necessity issued by the National Security Resources Board (STEEL, Dec. 18, p. 65).

More Coke—The program includes a 75-oven battery of coke ovens with necessary coal handling by-product and benzol facilities.

A 28-foot hearth diameter blast furnace, complete with stoves, ore bins and gas cleaning equipment, will be built. Capacity will be about 1400 tons daily.

Four new 250-ton open-hearth furnaces will be added. These are in addition to four furnaces now under construction. When the first four open hearths are completed, the company will discontinue its bessemer plant. Result will be a net increase in steelmaking capacity of 925,000 tons yearly.

Extend Yards, Docks — Other improvements will include a 675-foot extension to present ore yard and dock, two new ore unloaders, one turbo-blower, a steam boiler rated at 800 pounds per square inch, additions to the water treating plant, a new high back pressure turbo-generator and new water intake tunnel and pump house.

Eight two-hole soaking pits with necessary cranes and auxiliary equipment will be added. A slabbing mill, complete with tables, shear and slab handling facilities will be installed. A slab heating furnace will be installed at the hot strip mill and the strip mill finishing department will be extended.

New Steel Company

A NEW steel company, Green River Steel Corp., hopes to be producing blooms, billets and bars in less than a year at Owensboro, Ky.

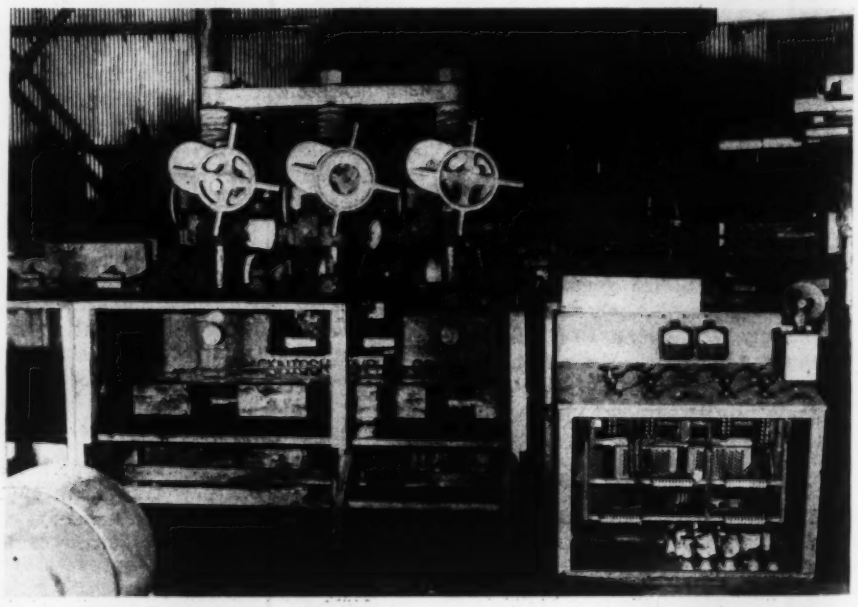
Green River has received a certificate of necessity from the government permitting it to write off 85 per cent of the cost of its $8-million facilities in five years. Orders for electric steelmaking, rolling mill and related equipment are being placed now. When facilities are installed, the plant will have the capacity to produce 185,000 to 190,000 tons of ingots a year.

Civic Spirit—Citizens of Owensboro purchased 127 acres of land on the outskirts of the city and donated it to the company which plans to employ 1100 to 1200 persons at the start.

Green River will obtain inexpensive electric power from the Owensboro municipal plant. It will get water from the Ohio river and will be served by the Louisville & Nashville Railroad.

The company will be able to produce alloy, special and carbon steels, but the grades it will make probably will be determined by the government. Plans for the new steel firm were begun more than two years ago, but Green River has been incorporated only about a month now. It hopes to have a $12-million to $15-million steel plant eventually.

President—Sidney D. Williams, 700 Fairway Dr., Warren, O., is president and general manager of Green River. He was formerly vice president in charge of Copperweld Steel Co.'s Warren Division. Associated with him will be Robert B. Hensley and Frank B. Logan as vice presidents. They are both attorneys in Louisville. Warren Worthington, Oliver Bldg.,



CROSSED-ROLL STRAIGHTENERS: Here is one of the two Mackintosh-Hemphill rotary straighteners in the No. 2 continuous weld mill that was opened in June of this year by Youngstown Sheet & Tube Co. in its Indiana Harbor plant. The machines will straighten 15,000 tons of from 1½ to 4-inch butt weld steel pipe in an 18-turn per week monthly production schedule. The crossed-roll straighteners handle pipe in lengths up to 46 feet

Pittsburgh, is consulting engineer for the company.

Atlantic Plans Furnace, Mill

Atlantic Steel Co., Atlanta, is starting a three-year expansion program to increase its capacity 50 per cent and double its output of rolled products, Robert S. Lynch, president, announces.

First phase of the program will be installation of a 60-ton electric furnace at a cost of $1.5 million. Second, to begin when the new furnace is completed, will be addition of a new rolling mill to produce a wider range of sizes and types of steel bars and shapes.

Republic Ups Alabama Capacity

Republic Steel Corp. will construct a battery of 63 new coke ovens at Thomas, Ala., (Birmingham) and enlarge two open-hearth furnaces at Gadsden. The new coke oven battery at Thomas will have an annual capacity of 400,000 tons, and will make possible immediate restoration of No. 2 blast furnace which has been down since last June due to the shortage of coke.

The two Gadsden open-hearth furnaces will have an increased annual capacity of about 36,000 tons annually.

Republic's Alabama program will cost $5 million.

Lukens Starts New Expansion

Lukens Steel Co., Coatesville, Pa., has started the initial phases of a new expansion program.

Construction will begin soon on a new 60-foot extension at its By-Products Division plant to provide space for a new 2000-ton hydraulic press and on a 200-foot extension at the other end of the plant to provide additional handling, loading and inspection areas.

In addition, a new 16-foot boring mill will be installed "to provide for the requirements of a new order of considerable size," says the company. These and one or two other replacements are expected to cost around $500,000. They are a part of an overall expansion program the cost of which has not yet been determined.

Keel Laid for Ore Carrier

Keel for the first of three new 647-foot iron ore carriers for U. S. Steel's Pittsburgh Steamship Co. was laid Dec. 18 at the Lorain, O., yards of the American Shipbuilding Co. Unless shortage of materials and labor hinder, the ship will be launched Aug. 1 and delivered to its new owners Jan. 1, 1952. Each ship takes 6150 tons of steel, exclusive of machinery and fittings, and has been redesigned to haul 19,600 tons of ore compared with 17,000 tons for the *Irving S. Olds* built in the last war.

American Shipbuilding will lay the keel for a second vessel Jan. 8. The third ship will be built by Great Lakes Engineering Works at River Rouge, Mich. All three will have combined capacity of 2.2 million tons of ore annually which, President Walter C. Hemingway of Pittsburgh Steamship says will just about offset steelmaking capacity U. S. Steel has added in the Pittsburgh and Chicago districts. In 1950, bad weather shortened the ore hauling season so that the total moved was below normal at 30 million tons, of which 75 per cent was handled by Pittsburgh's own 61 vessels and the remainder under contract.

W. H. Gerhauser, American Shipbuilding president, expects to deliver one ore carrier each for the Columbia Transportation Co. and the National Steel Corp. by Aug. 15, 1952. Another vessel for Cleveland Cliffs Iron Co. will be started in a repair drydock at Toledo Apr. 1 and floated out by Dec. 1, 1951.

Great Lakes Engineering has three other ore carriers under contract and the Manitowoc Shipbuilding Co. a 666-foot self-unloader for Bradley Transportation Co., U. S. Steel limestone-carrying subsidiary.

Authenticated

NO MORE CLICKETY CLACK: The noise of car wheels passing over rail joints is a thing of the past on a 10-mile stretch of the Chicago & North Western Railway. The only joints in the rail are at signal blocks and switches. Normally standard lengths of rail have joints every 39 feet—270 per mile of track. The joint is the most likely spot for a pumping action of the roadbed to start from the weight of trains passing over it. It's one of the most costly items of rail maintenance. Here a gang is removing the welded rail from the car. Each piece of rail is anchored to the existing track and the train is simply pulled out from under it

Finished Steel Shipments Hit High

Steel companies shipped nearly 6,504,000 net tons of finished steel products in October, the largest total ever attained in a month, says American Iron & Steel Institute.

Shipments in the first 10 months of the year also made a record, at 59,459,000 tons, compared with 49,214,000 in the similar part of 1949 and 54,183,000 tons in the corresponding part of 1948, the year of record annual shipments.

The October total compares with more than 6,145,000 tons in September and 6,326,000 in August.

Shipments of 218,127 net tons of steel to railroad car and locomotive builders in October were about 50 per cent larger than the monthly averages for the previous nine months and for all of 1949. They constitute 3.4 per cent of total steel shipments in October and 2.6 per cent in 10 months, American Iron & Steel Institute says.

Jobbers, serving mainly small business, without including those specializing in the oil and gas industry, continued to obtain over 1 million tons of steel a month. In 10 months they received 16.7 per cent of all shipments, compared with 15.4 per cent in the similar 1949 period.

Westinghouse Forms Unit

The company establishes an Electronic Tube Division and will build three new plants

WESTINGHOUSE Electric Corp. has formed an Electronic Tube Division and plans to build three new plants to manufacture various types of tubes.

"The formation of this new division," says President Gwilym A. Price, "is but one step in the company's plans to realign its facilities for maximum production of needed equipment in view of the national emergency."

For Defense—The new plants undoubtedly will go into production of tubes needed for defense. Ultimately when military requirements drop off, the plants will make tubes for industrial and x-ray use, radio transmitting and receiving tubes and television tubes.

The company will also soon begin construction of a new office, warehouse and manufacturing and repair plant at Richmond, Va. The facility will consolidate all Westinghouse activities at Richmond except those of Westinghouse Electric Supply Co., a distributing subsidiary.

GLASS "MINE": One of two large furnaces that supply glass for fluorescent lamp tubing at Westinghouse's Lamp Division plant at Fairmont, W. Va., was shut down to permit maintenance work. When it's in operation the furnace contains 120 tons of molten glass at 2750 degrees fahrenheit. During the 30-month period between shutdowns the furnace consumes some 12,800 tons of sand, 1400 tons of limestone, 1100 tons of feldspar and 25 tons of arsenic to produce about 60,000 miles of glass tubing

Fisher Opens Washington Plant

The "technical Sears Roebuck," Fisher Scientific Co., has opened a new plant in Washington. Fisher sells its scientific instruments and apparatus largely through catalogs and fills its orders by mail.

The 5000-square-foot plant in Washington serves as an advance supply base for the Atlantic Coast area. The company has other manufacturing facilities at New York, Edgewater, N. J., St. Louis and Pittsburgh. At the latter is Fisher's main plant.

Leeds & Northrup Expands

Leeds & Northrup Co. acquired about 85,000 square feet of additional floor space in the Philadelphia area. The acquisition boosts its Philadelphia floor area by 28 per cent to a total of nearly 10 acres for the manufacture of electrical measuring instruments, automatic controls and heat-treating furnaces.

Laboratory Changes Hands

A group of executives and employees of Airborne Instruments Laboratory, Mineola, N. Y., in association with Laurance S. Rockefeller and certain of his associates, and with American Research & Development Corp., Boston, have purchased the entire capital stock of the laboratory from Aeronautical Radio Inc., Washington.

The transaction provides for the three groups to share nearly equal ownership of the research and development laboratory organized in 1949 as an outgrowth of three World War II laboratories associated with Columbia and Harvard universities and Massachusetts Institute of Technology. Management of AIL will remain in the hands of Hector R. Skifter, president and general manager; D. M. Miller, vice president, and C. May, secretary-treasurer.

Dillon Moves to Chicago Suburb

W. C. Dillon & Co. Inc., development firm and manufacturer of testing and control devices has moved to new offices and laboratory at 1421 S. Circle Ave., Forest Park, Ill. Forest Park is a Chicago suburb.

Principals in the company include W. C. Dillon Sr. and his six sons.

More Carbon, More Graphite

National Carbon Division of Union Carbide & Chemical Corp. announces plans for a further major addition to its electrode expansion project announced early in August of this year. The addition will increase its capacity for producing graphite and carbon electrodes and the necessary facilities involved will be added to the present carbon electrode plant at Columbia, Tenn., to make it a completely integrated plant for producing carbon and graphite electrodes. Production from the new facilities is expected to begin in mid-1951. When completed by early 1952, many millions of pounds of graphite production annually will have been added. There will also be a big increase in the production of carbon electrodes.

As a further part of the program to supply the electrodes to meet the fast-growing demand for electric steel, important improvements are being made at the corporation's electrode plants at Clarksburg, W. Va., and Niagara Falls, N. Y.

Emergency Warehouse Growing

When Emergency Steel Service of Chicago late last month formally opened its general offices and one wing of its new warehouse, it was the first step in its new expansion program. The newly built north wing is set up to handle 6000 tons of steel by overhead crane and to provide space for two Cincinnati shears and several presses for light fabrication. The next expansion set for late 1951—government control conditions permitting—is a south wing capable of handling another 4000 tons of steel.

Emergency's operational methods are based on telephone contacts, rather than traveling salesmen, and on bulletins, fliers and special offerings, in short, mail order selling.

Estate Stove Gets Toledo Desk

Estate Stove Co., division of Noma Electric Corp., Hamilton, O., acquired Toledo Desk & Fixture Co., Maumee, O., and announces plans to expand the plant and to continue the present line of kitchen cabinet equipment.

Reliance To Build New Plant

Reliance Electric & Engineering Co., Cleveland, will build a $1.5 million plant in Euclid, O., near Cleveland. It will be similar to a plant built by Reliance in Ashtabula four years ago.

Like the Ashtabula unit, the new facility will be designed for the manufacture of industrial type electric motors and accessories. It should be ready for occupancy by mid-1951.

Two Equipment Firms May Join

Directors of Baldwin-Lima-Hamilton Corp., Philadelphia, approved a plan to acquire all the common stock of Austin-Western Co., Aurora, Ill., manufacturer of construction equipment. The plan is subject to working out all necessary details.

Baldwin-Lima-Hamilton's locomotive products and Austin-Western's line are complementary. McClure Kelley, Austin-Western president, says that the present management and personnel of his firm will continue to direct company operations.

Aerojet To Build in California

Aerojet Engineering Corp., Azusa, Calif., a subsidiary of General Tire & Rubber Co., has virtually completed a deal to acquire a rocket factory site near Sacramento, Calif. Aerojet makes rocket engines, including the JATO (jet assisted take-off) motor.

A $6 million plant to make work for about 500 will be built on a 7200-acre tract.

Boeing Sublets 63 Per Cent

More than 63 per cent of the airframe cost of all Air Force airplanes now under contract for manufacture by Boeing Airplane Co. goes to subcontractors and parts and material suppliers, says President William M. Allen.

"About 39 per cent of Air Force procurement funds assigned Boeing is diverted to subcontractors who build assemblies to Boeing specifications and ship them to our plants for incorporation in the airplane," says Mr. Allen. "Sixteen per cent goes to supplies of finished parts and over 8 per cent goes to aluminum, steel, wire and other raw material supplies." The remaining 37 per cent is used by Boeing for labor, facilities and operating costs.

But the total spent in those ways may account for as little as half the value of the finished airplane. Engines, propellers, radar, armament, wheels, tires, flight instruments and other accessories normally are purchased by the government and furnished the manufacturer.

Shipyard Will Build Rail Cars

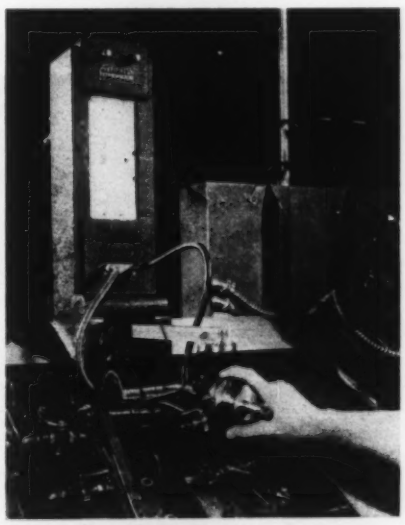
Bethlehem - Sparrows Point Shipyard Inc., Sparrows Point, Md., early next year will complete the last two ocean-going steamships for which it has contracts. To keep its force intact as far as possible until new orders are received, the company has accepted a contract to build 600 railroad cars.

Harvey Builds Aluminum Plant

Harvey Machine Co. Inc., is starting construction of a new plant that will add 72,000 tons to the nation's annual aluminum production capacity.

The new facility will be at Kalispell, Mont., near the Department of Interior's Hungry Horse dam. The dam will provide an inexpensive source of power for the plant. Harvey operates an aluminum fabrication plant at Torrance, Calif., which produces extrusions for the aircraft industry.

The Montana plant will begin operations in 1952. Its anticipated production is roughly equivalent to 10 per cent of the nation's pre-Korean total output of aluminum.



IN FORD'S FUTURE: By adding more and more automatic gaging equipment, Ford Motor Co. is reducing chances for human error in production processes. This automatic air gage is typical of the new inspection machines being added. Old-fashioned methods with hand gages are being superseded by automatic gaging of this type. The devices speed output because they are "tied-in" with other operations. Quality is certain since the gage never gets eye or arm fatigue

Atom Plant Proposed

Kentucky will get a $500 million facility if and when Congress votes the money

THE GOVERNMENT will build a new $500 million atomic plant near Paducah, Ky., when Congress votes the money.

The development came as the Atomic Energy Commission announced an agreement to produce uranium from South African gold ore. Four South African mining firms will produce the element and the U. S. and Britain will buy it. "The South African gold ores represent one of the world's largest sources of uranium," says AEC. "Although the uranium content of the ores is small, potential production is relatively large because of the great quantities of the ore mined.

The proposed Paducah facility is part of the $1050 million expansion in the atomic energy setup recommended by President Truman. The plant will be near the Kentucky Ordnance Works. About 5000 acres will be required, 1400 of which are included in the Ordnance Works site.

A private power syndicate has offered to supply half the electricity for the plants and AEC has tentatively accepted. TVA would supply the other half.

Leases Titanium Plant Site

National Lead Co. leased several buildings at the Henderson, Nev., site of Basic Magnesium Inc. and has contracted for power there with the Colorado River Commission of Nevada.

Titanium metal production with these facilities is under consideration. A plant capable of turning out large tonnages of the metal involves a cost of $15 to $20 million. Such an operation also requires several hundreds of millions of kilowatt hours of power annually.

The lease gives National Lead Company 80 acres of land with seven buildings totalling almost 200,000 square feet in area. Power allocations have already been made to the extent of 151 million kilowatt hours annually.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

As mobilization director, C. E. Wilson has a rugged job ahead. The powers given him are unquestioned as well as unprecedented

WASHINGTON observers see no easy road ahead for Charles E. Wilson. The industrial leader who left his $175,000 a year job with General Electric Co. to work for the government at $22,500 will need all the toughness acquired in his Hell's Kitchen upbringing to fight his way out of the hot spots awaiting him in the months to come.

Already Taut — When the United States prepared for World War II, it started with a lot of slack in the economy. Such isn't the case today. Every bit of military production will mean a subtraction from civilian production; the present NPA restrictive orders on critical materials are only a curtain-raiser for what is in store. Current talk in the capital is of $100 billion for defense in fiscal 1952. That means the making of decisions that will be unpopular with business, labor, politicians and the general public.

And the blame will be saddled largely on Mr. Wilson, for the power given him is unquestioned as well as unprecedented. He is empowered "on behalf of the President . . . . to direct, control, and co-ordinate all mobilization activities . . . including but not limited to production, procurement, manpower, stabilization and transport activities."

New Address—Mr. Wilson temporarily has set up shop in Room 100, Executive Office Building (the old State Department building next to the White House). He is not ready to discuss his plans but one of his first moves will aim at streamlining the sprawling defense agency setup. From the National Security Resources Board Mr. Wilson has borrowed Scott Hershey who will serve temporarily as his director of information. Mr. Hershey, an experienced Washington hand, can be addressed at Room 88 Executive Offices Building, Washington 25. His phone number is EXecutive 3300, Extension 3353. Mr. Wilson's extension, incidentally, is 2101 on Executive 3300.

If at First You Don't Succeed . . .

The freight absorption bill which was passed by both houses in the 81st Congress and vetoed by President Truman is to be reintroduced in the 82nd Congress. The Senate Committee on Interstate and Foreign Commerce, of which Sen. Edwin C. Johnson (Dem. Colo.) is chairman, has instructed its staff to prepare legislation "which will clarify the right of sellers to competitive freight absorption," with emphasis placed on the word "competitive."

Congress must clear up this confusion, declared Senator Johnson, because the Federal Trade Commission "considers itself unable and is in fact unwilling to clarify the law."

New Pentagon Information Unit

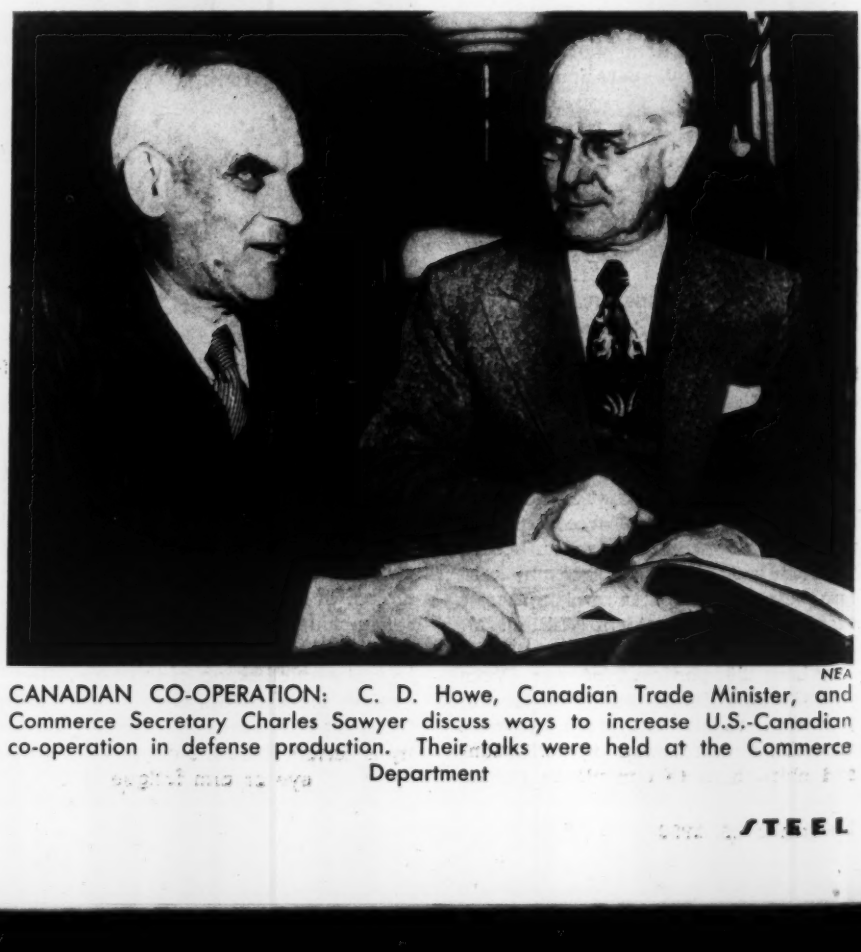
If you require any information at all from the armed services, get in touch with the new unit specially set up to service industry and labor. It is the Industrial Services Branch, Office of Public Information, Office of Secretary of Defense, Washington 25. Address: 2E771 The Pentagon; phone: LIberty 5-6700, Extensions 7-5881 and 7-5310. Experienced men are in charge: Lt. Col. George W. White, Jay Cassino and Lt. John Morris.

Only exception on information service is in the case of individual firms seeking contract information. On such errands the contact should be with the Central Military Procurement Information Service, Col. Bernice C. Philipps, director, 3D760 The Pentagon, Washington 25, phone: LIberty 5-6700, Extension 75321.

Titanium Research Continues . . .

Titanium research continues to be pushed by the Bureau of Mines as a part of its defense program. The main effort, at Boulder City, Nev., is to improve on the present batch process for converting tetrachloride into titanium so as to make the process continuous; attempts also are under way to develop a better process.

At Boulder City development is continuing on a technique for melting titanium sponge and pouring it into ingots; the present method is to press titanium powder into compacts, heat them, and roll them to shape. At the College Park, Md., station, the bureau continues to push its development of titanium fabricating methods, including welding.



NEA

CANADIAN CO-OPERATION: C. D. Howe, Canadian Trade Minister, and Commerce Secretary Charles Sawyer discuss ways to increase U.S.-Canadian co-operation in defense production. Their talks were held at the Commerce Department

Europe... Korean War Dominates '51 Economic Planning

British steel nationalization and the Schuman coal-steel pool are two other factors that will affect the course of West European industry next year

THE KOREAN war, the Schuman plan, nationalization of British steel companies—those events diverted the economic course of West European industry in 1950 and promise to affect metalworking performance even more in 1951.

The Korean war raised sales barometers in Western Europe, particularly in France and Belgium where basic steel and other industrial production had been falling in the first part of 1950.

Turned Up—By September, France, the Saar, Belgium and Luxemburg had their plants at full throttle again, and the production rates have been at or near capacities ever since. Britain and West Germany had been doing well even in the first half of 1950. All Western Europe is ready for a record output year in 1951. That means the U.S. can expect aid in the coming months to help meet rising domestic demand for American metalworking products. France hopes to double its steel exports to the U.S.; all West European nations will boost their steel shipments to America.

The Korean events forced a shift in ECA plans. First indication was the curtailment of aid to the United Kingdom, effective Jan. 1. Britain will be the first of 16 countries receiving Marshall help to do without it. Since the start of the program in 1948, the U.K. has received $2694 million from the U.S. which is now trying to make room in its budget for mounting defense costs. Other ECA nations expect modifications in their Marshall programs in 1951.

Inflation Again—Until the Korean war started, West European nations had inflation under control, but the spiral is starting once more. From the end of May to mid-September, the export prices of continental merchant steel products increased by 75 to 80 per cent. Sheets went up about 25 per cent. British quotations also increased, but not so much. The U.S. itself was responsible for some of the boosts as American buyers flooded the Eureopean markets with orders, particularly for steel and fabricated steel products. Rising labor and raw material costs also dictated the increase.

Since the demand created by defense requirements is bound to be maintained over a long time, the balance between production and need for steel in Europe by 1953 takes on a new complexion. About a year ago, some people estimated that the total demand for European steel in 1952, including overseas import requirements, would amount to 68.2 million net tons, to be measured against an estimated production (excluding Russia) of 77 million tons, leaving a surplus of 8.8 million tons. Present plans for steel development will bring output in 1953 to about 79.2 million tons. Defense demands of the Western nations will leave little surplus.

A Start—The Schuman plan to pool Europe's coal and steel resources may get preliminary implementation in 1951. The proposal was made last May by the French and accepted by West Germany, Belgium, Luxemburg and Italy. The British won't join on the ground that they cannot participate in any scheme calling for supra-national authority exerting any form of control over British industries. Nationalization is an issue, too. Publicly owned British steel would have a tough job to find a common meeting ground with privately owned continental industries.

The continental participants in the plan are going ahead and may be able to get the program started next year. A whole series of difficulties must still be solved. The planners must integrate European markets to offer the same opportunities to all contracting parties. Marked differences in the level of wages among the participants, the supply of raw materials, the degree of productivity of the plants and other factors of production costs cannot be easily solved. The idea of a compensation fund, subscribed to by the participants, to assist those who find themselves handicapped appears to be a solution which will be recommended. But this is true: A transition of years will be necessary before the plan can work smoothly.

The Score Now — Delegates to study the plan have agreed to recommend that a high authority to administer the program should come under the control of the European Council of Ministers. All participating countries would be represented on the council. Its decisions must be unanimous.

Machinery is being worked out to enable Britain to become associated with the scheme in some form or another. A treaty will be drawn up for the program which will have to be ratified by the parliaments of the participants.

Bigger Meaning — Nationalization of the British steel industry has international importance. Britain is the first and only country in Western Europe to place its steel industry under state ownership. Britain is also

NEA

ALLOUT EFFORT: A Ruhr steel plant demolished in the war is one of the many German facilities that will be repaired in the near future. The Schuman plan to pool industrial strength has caused the Germans to start an allout effort to repair heavy industry plants. An allout effort will be needed on this one

NEA

130-MILE-AN-HOUR FRIGATE: The nationalized Renault Auto Co.'s latest model, the Frigate, was inspired by American and Italian design. First deliveries on the 130-mile-an-hour car are expected to be made in June, 1951

the largest steel producer in Western Europe. Her action could swing the tide toward public ownership in other countries.

There's still a slim chance that nationalization won't occur in Britain. If the Conservatives win general elections in 1951, they could reverse the Laborites and hand the industry back to its original owners even though the vesting date for public ownership —Feb. 15—will have been passed. Under the act for the steel companies, the government board to control the industry will leave a considerable amount of initiative to the existing firms, which will retain their names. Control will be exerted only in matters of high policy.

Better Off—In 1950 West Europe's imports from the U.S. declined markedly, and a large increase came in the gold and dollar holdings of the countries participating in the Organization for European Economic Cooperation (OEEC). The European Payments Union (EPU) was approved by the promoters last July, but it's still not finally ratified. When and if it is, it should do much to stimulate intra-European trade. The increase in West Europe's production was due largely to increased productivity; the increase in 1950 production occurred with only a slight rise in employment. ECA-financed capital expansions are beginning to pay off.

The auto industry flourished the most in 1950. During the first half, the combined output of autos and trucks in Britain, France, Western Germany and Italy hit 751,200, compared with 541,900 in the first six months of 1949. Great Britain is the leading producer. Auto exports reached a postwar peak in 1950.

Smudge—One of the darkest spots in Europe's economic picture is coal. A deficit in supplies is expected during the first quarter of 1951. Metallurgical coke threatens to be especially tight, particularly in Britain.

Supplies of scrap in 1950 were inadequate and will be even more so in 1951. The great postwar scrap source, Germany, has nearly been cleaned out of its most easily obtainable material from bombed cities and factories.

Behind the Iron Curtain—Russia and its satellites increased industrial production in 1950, but not to the extent that West Europe did. U.S.S.R., in addition to its own industrial expansion has promoted other developments, notably in Poland, Czechoslovakia and Rumania. In Poland, a six-year plan covering 1950 to 1955 has an objective the construction by 1955 of an integrated steel plant with a capacity of 3,850,000 net tons of pig iron, 5 million tons of ingot steel and 3.5 million tons of rolled products. Less spectacular developments are planned in other areas of Eastern Europe.

Production was hampered in 1950 in Poland by pig iron bottlenecks. Czech output of autos was relatively low because of scarcity of components. The problem of rejects also cut Czech production of many metalworking products in the past year. Unadvertised labor troubles in the satellites marred industrial performance.

Going Up—Russian steel output in 1950 will be 22 or 23 per cent over the 1949 level. The nation has given a lot of attention to its transport system and now has a record 900,000 freight cars. Russian railroads carried 580 billion ton-kilometers in the past year. Passenger traffic exceeded 100 billion passenger kilometers. Russia probably exported 3 million tons of iron ore to the satellites in 1950. It imported 500,000 to 600,000 tons of finished steel products from Europe, nearly all from Poland, Czechoslovakia and Hungary.

Russia, Czechoslovakia, Poland, Hungary and Rumania produced 34.3 million net tons of ingot steel in 1950, 23.8 million in 1949. Western European nations produced 56.4 million tons, 52.7 million in 1949. The Russian zone of Germany and Yugoslavia are not included in the Iron Curtain figures. They produced in 1950 1.3 million tons and 550,000 tons respectively (770,000 tons and 440,000 in 1949).

Australian Market Fades

U. S. makers of heavy crawler tractors of more than 100 horsepower will be losing a market after 1952. Australia will receive its first quota of the units from Britain in that year. Producers in England are tooling up to build the machines that up to now have been available only from America. Australia will buy 250 a year for the next five years.

West Australia wants a steel industry, but the Australian government won't release the dollars necessary for preliminary surveys to cost more than $100,000. H. A. Brassert

STEEL's series on the economic pasts, presents and futures of the major Western European countries is concluded here with a summary of the general situation. The series was prepared by STEEL's European staff headed by Vincent Delport. J. A. Horton gathered material for the article on Great Britain and Herbert Gross prepared the German summary which both appeared Dec. 18. The Dec. 11 articles were prepared by Leon Jaudoin for France and Jacques Foulon for Belgium. Erik Hook made the analysis of Sweden and Dr. Mario d'Onofrio the analysis of Italy in the Dec. 4 issue. Complete iron and steel statistics for all industrial nations of the world will be carried in the 1951 Metalworking Yearbook issue Jan. 1.

& Co., New York, has already done some geological work.

Western Australia has iron ore deposits at Koolan Island and some coal.

Foreign Steel Trade Shifts

Declining exports and climbing imports may help steel consumers in 1951

A REVERSAL in America's steel export-import relationships promises to give more relief to U.S. steel consumers in 1951.

Steel exports in the first half of 1950 averaged 289,812 tons. Figures thus far available for the second half indicate that the average will drop to about 250,000 tons. That will be less than half the 1949 monthly average of 522,000 tons. About 567,000 tons of iron and steel products were exported each month in 1939.

Steel Income — America's imports of iron and steel products are rising steadily. In the first half of this year they averaged 106,643 tons per month. They'll probably average about 240,000 tons a month or more in the second half. Average monthly imports in 1949 were 126,500 tons, 29,416 tons in 1939. The trend—declining steel exports and climbing steel imports—is likely to continue in 1951.

During the first half, a large part of shipments was for Europe on ECA funds. Business from South America was light becauise of lack of dollars. South Americans were, and still are, turning increasingly to Europe for their needs, particularly reinforcing bars, plates and shapes. Exports to Canada are important, but declining as Britain moves in. The exports to Europe from the U.S. are chiefly hot and cold sheets, tin plate and specialties. The specialty shipments will probably continue at present levels in 1951 but sheet and tn plate exports will slip.

Leery—American tin plate producers are skeptical of European business because much tin plate capacity will soon be in operation abroad. The U.S. manufacturers fear they will lose the foreign markets eventually anyhow. They reason: Why supply them when domestic demand is so high? They have been meeting emergency foreign needs when spoilage of food crops threatened from lack of plate.

South Africa expects to have tin plate mills running by late 1951, with capacities of at least 200,000 tons annually. Some of that production will be for export. The Dutch and British have new tin mills under construction which soon will be producing.

U.S. Steel Allocated to Canada

Two National Production Authority orders will allocate U.S.-produced steel to Canada.

One order allocates American steel to help complete 11,000 Canadian-built freight cars. The other regulation earmarks steel from U.S. mills to Canadian warehouses. The car builders will get 8000 tons of steel products each month during March, April, May and June.

The allocation to Canadian warehouses requires American steel producers to allocate to their regular Canadian distributors a proportionate share of the average monthly shipments during the first nine months of 1950. The supplies will come out of steel which is left over after mills have filled U.S. defense requirements.

Blaw-Knox Gets German Process

Chemical Plants Division of Blaw-Knox Co. will design and construct plants employing low temperature processes developed by Linde Eismachinen Co. in Germany.

The arrangement with the German firm will enable Blaw-Knox to build plants for tonnage production of oxygen, an element of growing importance to steelmaking and chemical processing. Plants built by Blaw-Knox and embodying the process will be engineered to American standards and will require low capital costs and low power consumption.

Among other processes made available by the arrangement between the American and German companies are the low temperature separation of industrial gas mixtures, such as coke oven gas; and the separation of rare gases, such as argon, from the atmosphere.

Manganese Distribution Studied

The principal consumers of manganese ore and producers of ferromanganese and electrolytic manganese have met with Defense Minerals Administrator James Boyd to discuss the most efficient means of distributing available supplies to permit continued high-level steel production and maximum additions to the national stockpile.

The main problem now is proper distribution of ore grades rather than total tonnage which has been increasing despite world conditions. Industry representatives agree that the most practical way to achieve an equitable redistribution of stocks between companies by grade would be to arrange a system of distributing new supplies rather than to move existing stocks from one plant to another. To that end, consumers are supplying Dr. Boyd with details about their stocks, so a distribution plan for new supplies can be set up.

NEA

MEET THE PRESIDENT: Claude A. Putnam, outgoing president of the National Association of Manufacturers, congratulates William H. Ruffin, Durham, N. C., textile manufacturer who was elected 1951 NAM president

SEVEN STRONG REASONS

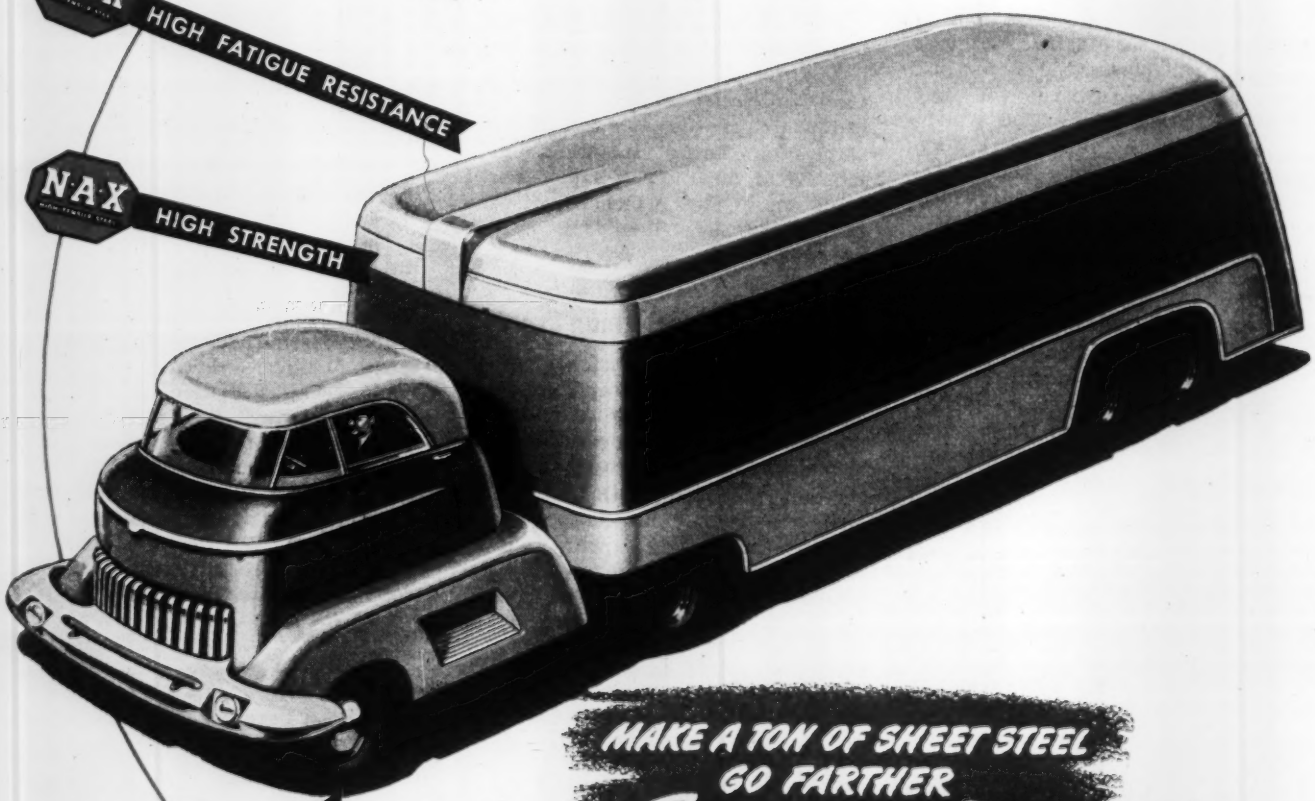
A better steel for the purpose in hand has always found favor with manufacturers of commercial vehicles . . . currently the trend is to N-A-X HIGH-TENSILE steel.

N·A·X GREAT IMPACT TOUGHNESS

N·A·X FINER GRAIN STRUCTURE

N·A·X HIGH FATIGUE RESISTANCE

N·A·X HIGH STRENGTH



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NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

The battle of the boost on auto prices proves to be more than the government bargained for. The tangle may hasten price controls on everything

DETROIT

ROUND ONE of the "battle of the boost" was won by the government's Economic Stabilization Agency, but the scrappy automotive companies were a long way from throwing in the sponge. In fact as they came out for round two they threw, instead, some haymakers that had telling effect on ESA. Around the auto capital guessing is that ESA will change its arbitrary price rollback, or that it will go all the way and set up controls on everything. Either is preferable to freezing only auto prices at the Dec. 1 level.

Puzzler—It's hard to understand how or why ESA picked on this industry for its first price regulation. If the action was taken to get in the good graces of labor which has sought price control for several months, it had the opposite effect. If it was prompted by the sincere desire to halt inflation it was a peculiar place to start. It probably was aimed at throwing a scare into other industries in a try for voluntary price stabilization since the agency still lacks the manpower to set up and regulate the control machinery. But the reaction and retaliation of the automobile manufacturers negates this attempt.

The freeze at Dec. 1 levels of course, wipes out the increases posted by Ford; GM on Cadillacs, Chevrolets and Pontiacs; Chrysler on its yet to be introduced 1951 models; and Nash. The order does not cover trucks, motorcycles, foreign-made or used cars.

Logic Ignored—ESA made its decision in spite of the automakers' arguments that rising materials and labor costs make it impossible for them to hold the price line and that next year's lower volume will further raise unit costs. It disregarded a sense-making suggestion by Ford's executive vice president, Ernest R. Breech, that the automakers limit price increases to 75 per cent of the increases in unit costs since the May 24-June 24 base period set forth in the Defense Production Act, or to less than 75 per cent of the percentage increase in the BLS wholesale price index since June, 1950. It overlooked the Ford disclosure at the fateful Dec. 13 meeting that some of the company's models are being sold at a loss and that costs since June have risen 9.6 per cent, not the 5.7 per cent which Ford's price boost amounted to. It ignored the fact that GM has reduced prices three times since 1948 so that the net increase in GM car prices, had they been permitted would have been only 3 per cent over the 1948 level.

ESA is getting more of a fight than it bargained for. Twelve thousand Chevrolet, Pontiac and Cadillac dealers will be on the agency's neck if GM doesn't soon lift its ban on sales of these cars. These are in addition to the union leaders whose contracts are jeopardized. GM swung a double-bitted ax by ordering these dealers to sell no new cars received by them on or after Dec. 18 until further notice. Title of the cars remained with GM divisions. It told the unions that GM would fight "to preserve its labor agreements and to maintain its policies for the fair compensation of employees." A wage freeze, required except in exceptional circumstances by the Defense Production Act when prices are frozen, brings up the knotty problem of cost-of-living escalator clauses and the annual improvement factor.

Oblique—GM's sales freeze was a direct move to enlist dealer support against the ESA action. GM in advising its dealers that new cars are shipped on consignment and are not to be sold used this language to help cinch aid: "With respect to 1951 passenger cars delivered to you . . . prior to your receipt of this telegram and with respect to which title has passed to you, these are your property and the disposition thereof in the light of Price Regulation I or any further government action must be determined by you."

Ford reminded ESA's Valentine that actual retail prices will not be effectively controlled by price regulation. Black markets would inevitably develop, which Ford would be powerless to prevent. "Our company," Mr. Breech declared, "can only suggest prices which should be charged by our 8000 independent dealers. Thus while a price rollback would cut government revenue through lowered tax collections and would actually hurt Ford Motor Co., it would not necessarily lower the actual price of automobiles to the consumer."

Thaw Coming?—How long GM would freeze 1951 car sales seemed to hinge on the outcome of last Wednesday's meeting of the industry with ESA's Wage Stabilization Board. A parcel full of labor trouble in the industry also was predicted unless provisions of the five-year contracts are retained. Walter Reuther, UAW-CIO president, warned against "unstabilizing" industrial relations. The long-term contracts established "the most stable relations in the history of this key defense industry. For a government agency to disturb that stability at this point would be a damaging blow to our defense effort and do irreparable harm to the morale of industrial workers," he said. If there is trouble it will affect one-third of the nation's potential defense production, this being about the percentage of the war-vital facilities with UAW contracts. Local UAW presidents also told managements any disturbance of the escalator clause would mean immediate suspension of their contracts.

Complete price control in all in-

Auto Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	842,304	678,092
September	760,808	657,073
October	804,553*	601,021
November	632,997*	465,135
December		384,318

Weekly Estimates

Week Ended	1950	1949
Nov. 25	122,683	76,026
Dec. 2	152,107	72,994
Dec. 9	162,757	52,514
Dec. 16	169,480	86,226
Dec. 23	155,000	116,567

Estimates by Ward's Automotive Reports

* Preliminary.

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dustries, however, should prevent fluctuation in the cost-of-living index and might thereby rule out union dissatisfaction over the possible voiding of this contract provision. Not so easy to figure in advance is the reaction to a possible voidance of the raises promised annually to workers in companies which planned on technological improvements raising productivity.

Conversion to war production would throw such planning out of kilter. Such increases, furthermore, would build inflationary pressure from an important segment of the total working force. If other workers did not share in raises, intense dissatisfaction would certainly be created.

Autos: Essential to Defense

The automotive industry is carrying on another running fight with the government. It's aimed at proving that continued automobile production is essential to the defense effort.

Behind the Times — Cristy Borth, educational director of the Automobile Manufacturers Association, recalls that government officials did not find out that the passenger car had taken its place among the basic essentials of life until its production was curtailed early in World War II. As early as 1943 Leon Henderson, the OPA administrator, saw the light and told a Senate committee that the public's reliance on automobiles and busses had been understated, even by the auto and rubber industries and by their trade associations. In planning for World War II controls the government discovered that 13 million people in American suburbs relied entirely on automobiles for transportation. Suburban growth since that time has accelerated, and suburbs are now expanding at a rate two and a half times that of the national growth.

Dependency on passenger cars also shows up in a Crowell-Collier survey of multiple-car ownership. In 1950 the percentage of families owning more than one car is more than twice the 1948 percentage. This year 11.1 per cent of the car owners have two or more in their stable. Last year it was 6.2 per cent.

Me, Too—The unions are carrying on the fight for continued high level car output by opposing the type of restrictive orders put out by National Production Authority before enough war contracts have been placed to prevent substantial unemployment in the industry. Materials shortages and restrictions over use are expected to put about 100,000 workers out of work in the Detroit area alone by next March. One labor official suggests that the government pay unemployed auto workers $60 a week and forgive all their debts. This chap is up for re-election, so the purpose of his idea is clear, but the situation ahead is nevertheless full of dynamite.

Plymouth Cinches Third Place

Buick sales for the first ten months of the year were 23 per cent beyond the total for all of last year, hitting 464,798. Hopes of this division for capturing third place in the industry have faded, however, since Plymouth has now moved into this spot by a comfortable margin.

New Cushion and Back Seat Design for Gentle Riding

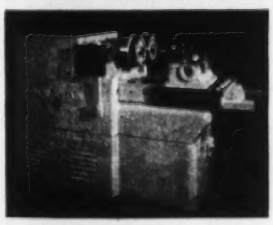
SAVING of 25 per cent in the amount of steel required for automobile cushion and back seating units has been effected in a revised design developed by L. A. Young Spring & Wire Corp. after nearly two years of research and testing. First described in STEEL for Nov. 13, p. 83, the assembly introduces Masonite Presdwood as a solid foundation panel, which called for perfection of a method of stapling coil springs and steel tubing to it.

Instead of using 2½ to 6 square yards of burlap to wrap each individual coil to keep it silent, that material is eliminated entirely and the complete assembly is coated with a rayon flock which, in addition to soundproofing also acts as a stabilizing agent and rust preventive. The design changes, besides the materials savings, permit major economies in production so the assembly can be sold competitively with the newer type of zig-zag cushion spring.

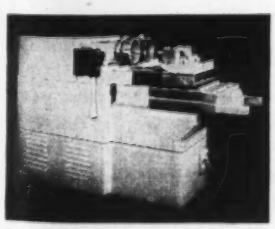
L. A. Young executives are confident a changeover from the conventional to the yet-unnamed innovation will be rapid both at two Detroit plants which supply cushion springs and at the corporation's similar facilities at Chicago, Trenton, N. J., Windsor, Ont., and San Leandro and Los Angeles, Calif. With the introduction of the new units, the company is engaging in the manufacture of steel tubing for the first time, permitting it to supply automobile plants with a complete coil spring cushion and back assembly in a "package." Use of tubing eliminates frames formerly made of steel stampings.

Considerable research went into the technique of stapling steel to the pressed wood, L. A. Young engineers collaborating with the Masonite Corp. and two manufacturers of stapling machines. The wood panels are made by exploding wood chips in large "guns" and then compressing the resulting fine fibers under heavy pressure. It is widely used industrially and has found numerous automotive applications over the past 20 years. The material has many of the characteristics of wood, plus the advantages of being grainless, knotless, smooth and unusually strong.

MOUNTED FOR DISPLAY: The automobile cushion and back seating ensemble developed by L. A. Young Spring & Wire Corp. is made by a new process of stapling the coil springs and the tubular frame steel to Masonite. The unit is made soundproof with flock-rayon fibers bonded permanently to every part by a rubber base adhesive. A burr is formed on the staple when driven through the tubing, thus eliminating any possibility of the staple pulling out in use



Model 26 & 27 Straight Boring Machine for precision finishing operations on a wide range of work.



Model 36 & 37 Straight and Contour Boring Machine, single point bores, turns, faces, contours, and positively repeats with extreme accuracy.

. . . the addition of a new double-ender to our regular line of precision boring machines

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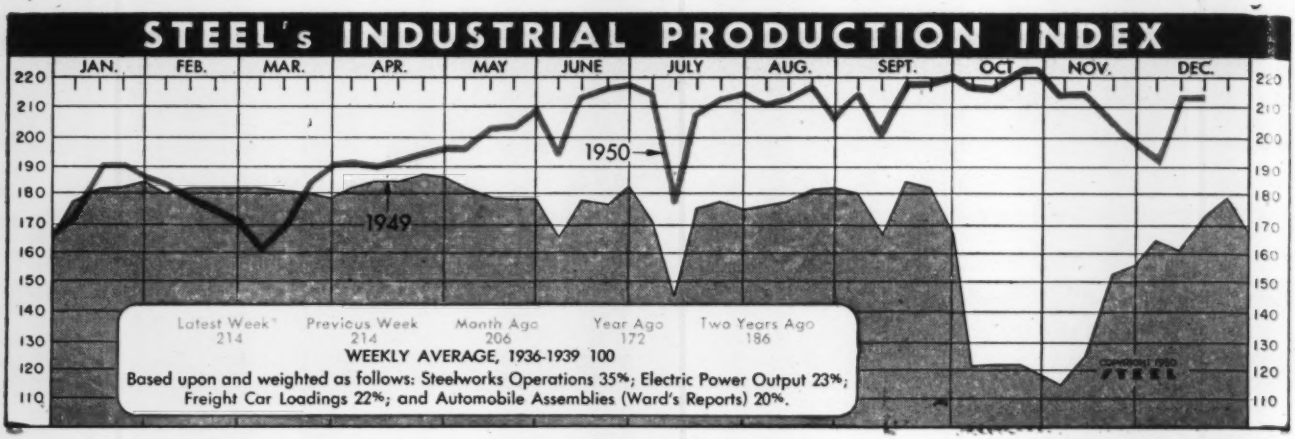
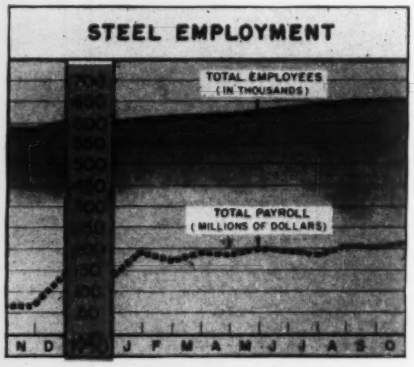

STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1950
1949
Latest Week* 214
Previous Week 214
Month Ago 206
Year Ago 172
Two Years Ago 186
WEEKLY AVERAGE, 1936-1939 100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
STEEL

Week ended Dec. 16 (preliminary).

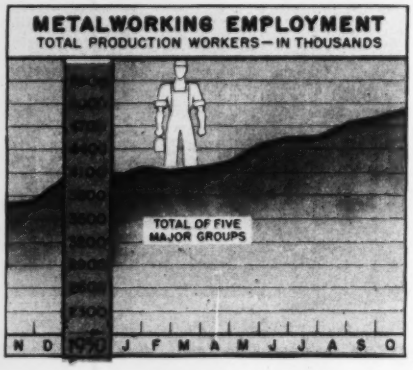


Charts—Copyright 1950, STEEL

Steel Employment, Payrolls

	Employees in Thousands		Payrolls in Millions	
	1950	1949	1950	1949
Jan.	609	650	$189.3	$202.1
Feb.	613	653	174.7	189.8
Mar.	616	652	190.0	207.2
Apr.	621	647	186.2	191.9
May	628	637	199.9	188.4
June	636	625	195.3	181.8
July	643	610	188.7	160.3
Aug.	649	603	206.6	175.6
Sept.	650	600	203.8	173.5
*Oct.	650	584	212.2	63.1
*Nov.	...	584	....	63.1
Dec.	...	602	....	136.9

Monthly average. * Averages taken from single figure for the two strike affected months in 1949. American Iron & Steel Institute.

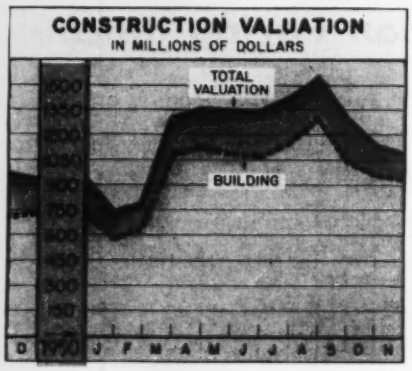


Metalworking Employment

Production Workers—Five Major Groups

1949	Prim. Mtls.	Fab. Prod.	Mach. inery	Elec. Mchy.	Trans. Equip.
Oct.	559	677	922	548	986
Nov.	737	666	908	546	898
Dec.	955	988	929	558	896
1950					
Jan.	963	693	936	561	978
Feb.	977	699	959	572	872
Mar.	982	709	981	580	879
Apr.	1,007	722	1,003	595	899
May	1,025	742	1,022	605	1,046
June	1,051	769	1,034	615	1,078
July	1,053	773	1,031	620	1,070
Aug.	1,085	815	1,059	655	1,112
Sept.	1,103	838	1,055	678	1,143
Oct.	1,120	849	1,092	700	1,144

Bureau of Labor Statistics



Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1950	1949	1950	1949
Jan.	730.9	483.0	578.8	381.0
Feb.	779.5	568.5	627.0	415.0
Mar.	1,300.2	747.6	1,075.3	579.2
Apr.	1,350.5	842.6	1,123.5	620.2
May	1,347.6	880.3	1,083.0	666.9
June	1,345.5	945.7	1,072.0	706.7
July	1,420.2	943.6	1,162.2	690.9
Aug.	1,548.9	905.7	1,295.1	671.5
Sept.	1,286.5	1,093.7	1,048.3	870.6
Oct.	1,135.8	1,061.8	956.7	857.8
Nov.	1,087.1	957.8	931.6	701.3
Dec.	....	929.0	....	722.2
Total	....	10,359.3	....	7,883.3

F. W. Dodge Corp.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Durable Goods Nov.27	Ironers Dec.18	Ranges, Gas Dec.4
Fab. Struc. Steel...Dec.11	Machine Tools Nov.27	Refrigerators Dec.4
Foundry Equip. Dec.18	Malleable Cast. Dec.18	Steel Forgings Nov.20
Freight Cars Dec.18	Price Indexes Dec.11	Vacuum Cleaners...Dec.4
Furnaces, Indus. ...Dec.18	Pump Orders Dec.18	Steel Castings Nov.20
Gear Sales Dec.4	Purchasing Power .Dec.11	Wages, Metalwkg...Nov.27
Gray Iron Dec.11	Radio, TV Aug.14	Washers Dec.11
Indus. Produc. Dec.11	Ranges, Elec. Dec.4	

Record Steel Payroll

Payroll of the iron and steel industry in October reached $212,187,000 and was higher than ever before in any month, the American Iron & Steel Institute reports. It was $8 million above September and broke the former record set in March, 1949, by more than $5 million. Total payroll for 10 months is $1,946,759,000 also a record and only slightly less than for the full year 1947 and fully twice as much as in 1940.

Wage earners were employed an average of 40.7 hours a week in October, the highest since 1945. September's average was 39.4 hours and the average for the first ten months in 1950 is 38.9 hours.

Hourly wages averaged $1.726 in October and the ten month average is $1.721. A ten-month average for 1949 is unavailable because of last year's steel strike but the average for the full year was $1.703. Employment continued to increase in October and reached 650,400, about 900 above September and more than 50,000 above September, 1949.

Construction Awards Slide

November's construction contract awards in the 37 states east of the Rockies totaled $1087 million, were 4 per cent below October's $1136 million but topped November, 1949, awards by 14 per cent. The 11 month total is almost $13,333 million and is 41 per cent higher than the corresponding 1949 figure. Total square feet of floor area for the first 11 months is 1,217,512,000 or 54 per cent above the same total last year.

Residential awards were $496,682,000 in November, down 6 per cent from October. Nonresidential awards were up 2 per cent from one month earlier and aggregated $434,894,000. Public and private works and utilities were $155,486,000 in November, off 13 per cent from October.

The Business Trend

National emergency or not, industry still sees a lot more government directives than it does orders. Controls imposed to date are only a start

CONTROLS—a bumper crop at that—will be harvested before full scale defense production has time to sprout more than the first blossom. Declaration of a national emergency by the President means a step-up in government directives along broad lines but so far the defense program consists largely of talking a good fight.

Selective price and wage controls applied to the automobile industry are only a starter. There is no doubt that they will eventually cover everybody, the only question is—when? In the meantime should controls continue to be applied on a selective basis the industries concerned will be working at a disadvantage. It has been said before, but bears repeating, that industries whose wages are controlled will have little chance of attracting new workers or even retaining some they already have. These industries who head the list for early controls are the ones who are vital to our economy, defense or civilian.

Some solace for business is contained in the appointment of General Electric Co.'s C. E. Wilson to head mobilization. Not all directives coming out under his direction will be gladly received by the companies affected but his reputation as a practical business man and a cutter of red tape make him well suited for a difficult job. Industry realizes its responsibilities and is willing to make sacrifices but its job can be made easier if there is understanding at the governmental level.

While the coming year appears certain to bring dislocations, shortages and headaches, industry and particularly metalworking is closing out 1950 with a rapid productive pace. In the week ended Dec. 16 STEEL's industrial production index was at a preliminary 214 per cent of the 1936-1939 average and matched the total for the preceding week. A drop in carloadings due to wildcat walkouts by railroad employees kept the index from climbing higher. Other index components, steelmaking, automotive assemblies and electric power generation, were high during the latest week reported.

Still More Steel . . .

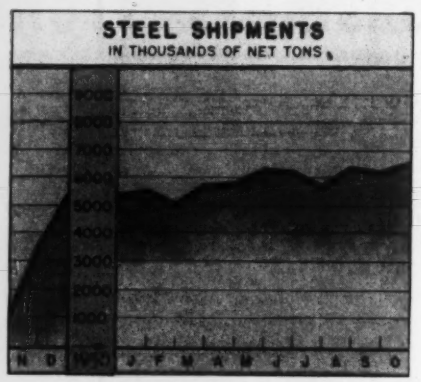
Certifications for accelerated depreciation for steelmaking facilities will further boost the industry's expansion. Unfortunately steel mills don't go up overnight and consumers will continue to scream for the steel they think they should get. While new facilities are being planned and built the existing furnaces are pouring out steel in excess of rated capacity. Last week output was about the same as in the week ended Dec. 16 when it was 101.5 per cent of capacity.

Automakers Drive Hard . . .

Outturn by the automotive industry shows a driving finish is planned for 1950. Apparently automakers intend to make every car and truck possible before government materials restrictions force a slowdown. It now appears that passenger car and truck assemblies in U. S. plants may miss the 8 million goal by a whisker. Based on the expected 120,000 trucks and 490,000 passenger cars in December, U. S. plants total for the year would be 7,990,000. It's still far

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	101.5	101.0	102.5	94.5
	Electric Power Distributed (million kilowatt hours)	6,985	6,909	6,728	5,997
	Bituminous Coal Production (daily av.—1000 tons)	1,900	1,567	1,833	1,601
	Petroleum Production (daily av.—1000 bbl)	5,805	5,755	5,882	5,000
	Construction Volume (ENR—Unit $1,000,000)	$136.5	$484.9	$214.9	$119.4
	Automobile and Truck Output (Ward's—number units)	169,480	162,757	125,970	82,226
	*Dates on request. †1950 weekly capacity is 1,928,781 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	670†	767	837	640
	Business Failures (Dun & Bradstreet, number)	150	170	170	191
	Money in Circulation (in millions of dollars)‡	$27,759	$27,698	$27,296	$27,701
	Department Store Sales (changes from like wk. a yr. ago)‡	+2%	−1%	+7%	−4%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$16,014	$17,679	$16,319	$13,918
	Federal Gross Debt (billions)	$257.0	$257.0	$256.9	$256.9
	Bond Volume, NYSE (millions)	$25.0	$25.3	$25.1	$25.0
	Stocks Sales, NYSE (thousands of shares)	13,856	11,813	9,871	10,822
	Loans and Investments (billions)†	$69.8	$69.9	$69.4	$66.9
	United States Gov't Obligations Held (millions)†	$32,924	$32,984	$33,392	$37,153
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	167.67	167.67	157.76	152.52
	STEEL's Nonferrous Metal Price Index‡	243.0	242.2	239.5	161.8
	All Commodities†	173.4	172.7	171.0	151.2
	Metals and Metal Products†	185.1	183.3	180.1	167.2
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

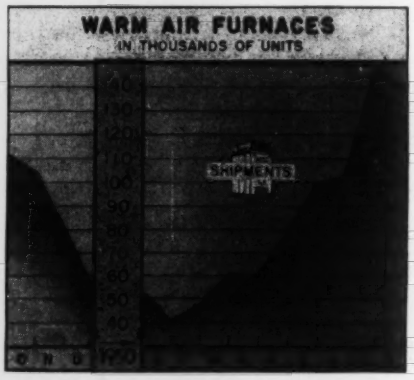


Steel Shipments

Net Tons

	1950	1949	1948
Jan.	5,482,691	5,788,632	5,410,438
Feb.	5,134,780	5,519,938	5,046,115
Mar.	5,723,340	6,305,681	5,978,551
Apr.	5,780,453	5,596,786	5,096,161
May	6,252,672	5,234,862	5,321,375
June	6,192,438	5,177,259	5,476,774
July	5,668,898	4,534,855	5,229,880
Aug.	6,326,464	4,918,314	5,329,060
Sept.	6,145,354	5,236,196	5,511,474
Oct.	6,504,000	935,037	5,952,008
Nov.	.....	3,296,809	5,732,256
Dec.	.....	5,410,902	6,056,282

American Iron & Steel Institute

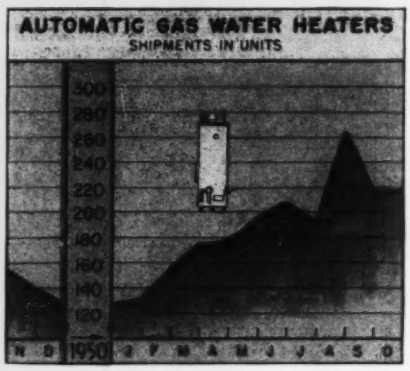


Warm Air Furnaces

Shipments in Units

	1950	1949	1948
Jan.	39,887	31,855	46,558
Feb.	45,618	33,125	36,345
Mar.	59,982	41,376	39,297
Apr.	58,798	34,595	45,597
May	78,349	42,427	55,473
June	98,517	55,857	64,724
July	102,189	48,551	57,292
Aug.	145,512	84,250	92,011
Sept.	139,014	111,582	103,566
Oct.	.....	102,989	107,024
Nov.	.....	78,828	77,498
Dec.	.....	51,766	51,163

Bureau of the Census



Automatic Gas Water Heaters

Shipments in Units

	1950	1949	1948
Jan.	131,600	88,400	126,600
Feb.	154,000	84,500	110,900
Mar.	172,800	106,000	131,600
Apr.	176,400	115,200	134,100
May	195,200	120,200	118,600
June	205,400	132,200	122,000
July	197,500	114,400	121,300
Aug.	264,000	138,800	160,200
Sept.	215,000	147,300	149,300
Oct.	217,300	154,200	127,500
Nov.	.....	138,300	109,000
Dec.	.....	126,500	88,900

Gas Appliance Mfrs. Assoc.

Charts—Copyright, 1950, STEEL

above the 6,258,000 units chalked up last year when an industry record was set. Canadian plants will add about 275,000 cars and 105,000 trucks to further swell the total.

Prices at Record . . .

Average primary market prices reported by the Bureau of Labor Statistics advanced 0.4 per cent in the week ended Dec. 12 to 173.4 per cent of the 1926 average, an alltime high. The latest index is 10.2 per cent above the June 20 level and 14.7 per cent higher than a year earlier.

Power Demands Huge . . .

The electric power industry's postwar expansion was firmly founded. New electric power output records are being posted with almost monotonous regularity. The latest record for electric energy distributed is 6985 million kwhr, reported by the Edison Electric Institute for the week ended Dec. 16.

Engineering Awards Low . . .

Heavy engineering construction awards in the week ended Dec. 14 dropped to $136.5 million, lowest rate since Mar. 2 and the fourth lowest figure in 1950. Just one week earlier a new alltime record of $484.9 million was set. Awards in the latest week reported were 41 per cent below the weekly average this year but were 14 per cent higher than in the same week last year. Total awards for the 50 weeks reported in 1950 reach $11.5 billion. Private construction accounts for $6.5 billion and public for $5 billion.

Dividends Back in Line

Payments by manufacturing firms in first 10 months set pace for all U.S. corporations

CASH dividend payments of American corporations aggregated $489 million in October and were 5 per cent over the corresponding month in 1949. The total compiled by the Commerce Department shows a return to the experience of the first eight months this year when dividend payments averaged 8 per cent above a year ago. This pattern was broken in September when extra dividends were largely responsible for pushing dividend payments 60 per cent over the like 1949 figure.

For the three months ended October, publicly reported dividend payments amounted to $1854 million, one-third higher than the $1378 million disbursed in the corresponding period a year ago. Manufacturing rose 50 per cent in the three month period to lead all other classifications. Dividend disbursements in the auto industry which expanded to $259 million this year from $93 million in the same three months last year contributed in large measure to manufacturing's higher payments.

Total for the first ten months in 1950 is up to $5512 million or 15 per cent above the $4782 million paid out in the corresponding 1949 period. Most of the broad industrial divisions participated in the advance. Increases ranged from 5 per cent in the light-heat-power group to 20 per cent in manufacturing. Only railroads, down 10 per cent, paid out less in dividends this year than in 1949.

Dividend movements among manufacturing subdivisions were divergent. Automobile companies payments were up 70 per cent over last year. Other industries showed gains varying from 3 per cent in nonferrous metals to 25 per cent in chemicals. Transportation equipment and textiles and leather groups registered minor declines in dividend payments in the first ten months.

Biggest Boom to Date

California factories are booming as never before. So says Neil Petree, first vice president of the California State Chamber of Commerce in a report on current economic conditions.

Mr. Petree says October factory employment in California rose 15 per cent to 838,000 from the like period last year. More than half the state's workers are located in metropolitan Los Angeles, which shared in the in-

crease. The number of unemployed for the entire state dropped to 143,000 in October, 86 per cent less than in October, 1949. Labor shortages in skilled and semi-skilled occupations are beginning to cause concern to California plants.

The report also says a record number of 939 plants were built or expanded so far this year.

Chrysler Will Expand

To meet the growing demand for automobiles on the West Coast, Chrysler Corp., will triple the size of its Los Angeles assembly plant and add 1200 new employees in 1951. About 880,000 square feet of factory floor area will be added and employment boosted to 2800.

Planned expansion of facilities will enable the firm to assemble complete bodies in Los Angeles. Presently the 430,000 square foot plant is supplied with finished bodies from Detroit. Built in 1932, and geared to turn out 250 cars per day, the plant currently produces 400 cars daily.

Housing Starts Skid

Bad weather and federal regulation of home mortgage credit combined forces causing a sharp drop in housing starts during November. Bureau of Labor Statistics reports 85,000 new permanent non-farm dwelling units were started last month, an 18,000 drop from October and 10,500 less than the number started in November, 1949.

The bureau says a seasonal dip normally occurs during the fall but "homebuilding was practically at a standstill in some sections of the country during parts of November because of severe storms." BLS did not say how much of the slide was due to bad weather and how much to credit regulations.

During the first 11 months this year nearly 1.3 million new dwellings were put under construction. This is 37 per cent above 1949 volume for the same months.

Wind Tunnel Contract Awarded

Westinghouse Electric Corp. has a $20 million order from the Air Force for electrical equipment to be used in testing jet aircraft. It includes two motors said to be the most powerful in the world, exceed the 65,000-horsepower rating of the current record holders at Grand Coulee Dam.

Motors and switchgear for their control plus two less powerful motors will be built at the company's East Pittsburgh plant. All the equipment will be for the Air Force's Arnold Engineering Development Center at Tullahoma, Tenn. The tunnel will be used to test full-size jet engines, guided missiles and wing sections and aircraft fuselages. Westinghouse's Sunnyvale, Calif., plant will contribute an air compressor which the company says will be the world's largest rotating machine. It will push air through the tunnel at speeds up to and above the speed of sound.

Caterpillar Won't Slow Down

Outlook for 1951 is for a continuance of the high sales volume that is currently exceeding plant capacity, says A. R. Brown, executive vice president, Caterpillar Tractor Co., Peoria, Ill. Possible decrease in farm income is not expected to affect sales of agricultural equipment and substantial highway construction and maintenance will be necessary whether or not military needs enter the picture.

Military purchases are expected to be greater next year than they were in 1950, Mr. Brown believes. The overall picture, subject to materials availability and government controls, is for a greater total demand in 1951 and for consequent increase in sales volume. Caterpillar currently is experiencing difficulty in getting sufficient steel and other materials and is buying abroad and trying to develop additional domestic sources.

Sales volume in 1950 has been at a record high and by the end of October passed $272 million, surpassing the record for all 1949. Net profit of around $25 million for all 1950 is expected. This would be equal to about $9 a common share, based on federal taxes currently in force but excess profits tax provisions will reduce this figure to about $7.50 per share, Mr. Brown says. Earnings in November and December match those in the preceding two months. October's profit was reported as $3,398,000.

Bankers Balk

A DRIVE has been started on Capitol Hill to get Congress to amend the Defense Production Act so bankers making V-loans to defense contractors or subcontractors would not be liable to any finding against the borrower that later might be made by a Renegotiation Board. While the contracting agencies, acting through the Federal Reserve System, guarantee the loans, the banks are turning away loan applications right and left because they do not care to accept the risk of having to make good on a renegotiation claim.

Demand Tapering Off

A tapering off in demand that became evident in October continued in November. That is the view taken by many purchasing agents surveyed by the Purchasing Agents Association of Chicago. Lower production and backlogs are reported for November by 14 per cent in comparison to October. While this is still only a small portion of all firms surveyed it does represent the second month in a reversal of the earlier trend.

Deliveries by vendors are slower compared to a month earlier say 75 per cent of the purchasing agents. Inventories of principal items are reported the same or smaller than in October by the same percentage. Employment at high levels is reported by 96 per cent of respondents, continuing the condition of full and expanding employment in effect for the last six months.

Spiraling prices tend to give another inflationary boost to the price structure. This is evidenced by the fact that eight out of ten members again report higher prices

Nelson To Get More Space

Because of two factors—the gravity of the Korean War and an increase of more than 50 per cent in sales in the last six months—Nelson Stud Welding Division of Morton Gregory Corp. decided to increase the floor space and manufacturing capacity of the Nelson plant at Lorain, O. The program includes substantial additions to stud manufacturing equipment and installation of facilities for producing ferrules used in the stud welding process, all of which were purchased heretofore.

The expansion does not take into account "the expected increase in defense-related sales that produced more than $6.5 million worth of business per year in shipbuilding alone in the last three years of World War II," says George E. Gregory, president of the company.

Ford Plans $1 Billion Expansion

Ford Motor Co. plans to spend $1 billion in the next three years for plant improvement and expansion. The $1 billion earmarked for the three years ahead compares with $600 million put out in the last five years. Originally the company announced plans for $600 million expansions for the next three years, but that figure has been boosted.

Men of Industry

RALPH J. CORDINER
. . . new president of General Electric

C. CARLISLE TIPPIT
. . . gen. purchasing agent at Reliance Electric

WALTER H. BEHNKE
. . . mgr., order & planning dept., at Reliance

Ralph J. Cordiner is the new president of **General Electric Co.,** Schenectady, N. Y., succeeding **Charles E. Wilson,** appointed director, Office of Defense Mobilization. Mr. Cordiner has been associated with GE for 24 years and since 1949 has served as executive vice president and a director. In 1942 he became director general of war production scheduling and vice chairman of the War Production Board. He rejoined GE as assistant to the president in 1943 and was elected vice president in 1945. Mr. Wilson, who submitted his resignation to the board of directors and severed all connections with corporate and banking institutions, completed 51 years of service with GE in November.

Roland E. Govan was appointed sales promotion manager, **Falk Corp.,** Milwaukee, with supervision over sales promotion and advertising. He recently was in charge of new products investigation.

Oscar Pearson, for 13 years chemist and metallurgist at the Ensley and Fairfield works of Tennessee Coal, Iron & Railroad Co., Birmingham, was made division superintendent of steel production at the Gary works of **Carnegie-Illinois Steel Corp.,** Pittsburgh. Both companies are subsidiaries, U. S. Steel Corp.

Charles L. Fess, formerly associated with Bankers Trust Co. of New York, and the equipment manufacturing division of Air Reduction Co. Inc., has joined the staff of **United States Air Conditioning Corp.,** Minneapolis, as assistant to the president.

C. Carlisle Tippit, manager of the order and planning department, **Reliance Electric & Engineering Co.,** Cleveland, was appointed general purchasing agent of the firm. **Walter H. Behnke,** in Reliance's applied engineering department since 1945, will succeed Mr. Tippit.

H. F. Devens and **H. L. Kay** were named district managers, **Western Brass Mills,** division of Olin Industries Inc., East Alton, Ill. Mr. Devens will be manager, East Alton sales office, and Mr. Kay will be manager, New Haven, Conn., sales office. Prior to joining Western in April, 1950, Mr. Devens was with Korhumel Heffron Preiss Steel Co., Chicago. Mr. Kay has been with the company since 1939.

Ladish Co., manufacturer of forged and seamless welding pipe fittings, has established a branch office in Tulsa, Okla., and named **C. E. Mahoney** manager. He was district manager for the company at Chicago. Simultaneously, Ladish announces a change in address of its St. Louis office and appointment of **W. H. Heckenberg** as district manager. The new office address is Suite 1605, Continental Bldg., 3615 Olive St.

Richard C. Christian, formerly market analyst for Rockwell Mfg. Co., Pittsburgh, will join **Marsteller Co.,** Chicago, marketing consultant, on Jan. 1 as senior associate.

E. D. Buchanan was appointed superintendent of open hearths at **Algoma Steel Corp. Ltd.,** Sault Ste. Marie, Ont., Canada. He formerly was open-hearth superintendent for Armco Steel Corp., Butler, Pa., and superintendent of steel works and assistant general superintendent at National Tube Co., Lorain, O.

Earl P. Leeds and **James Meehan,** who have been connected with the sales department of **Brown & Sharpe Mfg. Co.** at its home office in Providence, R. I., were appointed sales directors.

Erwin Steffens has joined **Precision Scientific Co.,** Chicago, and will head its metallurgical department. He was associated with R. W. Hunt Co., where he was metallurgist in executive charge of engineering work. Mr. Steffens replaces the late **E. D. Holt.**

Willis McGerald Peirce, assistant to the general manager, technical department, New Jersey Zinc Co., Palmerton, Pa., was elected president of **American Institute of Mining & Metallurgical Engineers** for 1951, and will take office Feb. 20 at the institute's annual meeting in St. Louis. Other officers will be **Joseph L. Gillson,** geologist with E. I. du Pont de Nemours & Co. Inc.; and **Michael Haider,** vice president and general manager, production department, Imperial Oil Ltd., elected vice presidents and directors of AIME for three years.

Charles E. Newman was appointed sales engineer for the Chicago territory of **Surface Combustion Corp.,** Toledo, O. He will be associated with **William M. Dempster** of the Chicago office, and will handle the company's standard industrial equipment.

Albert M. Fiala was named manager of government sales in the industrial products sales department of **B. F.**

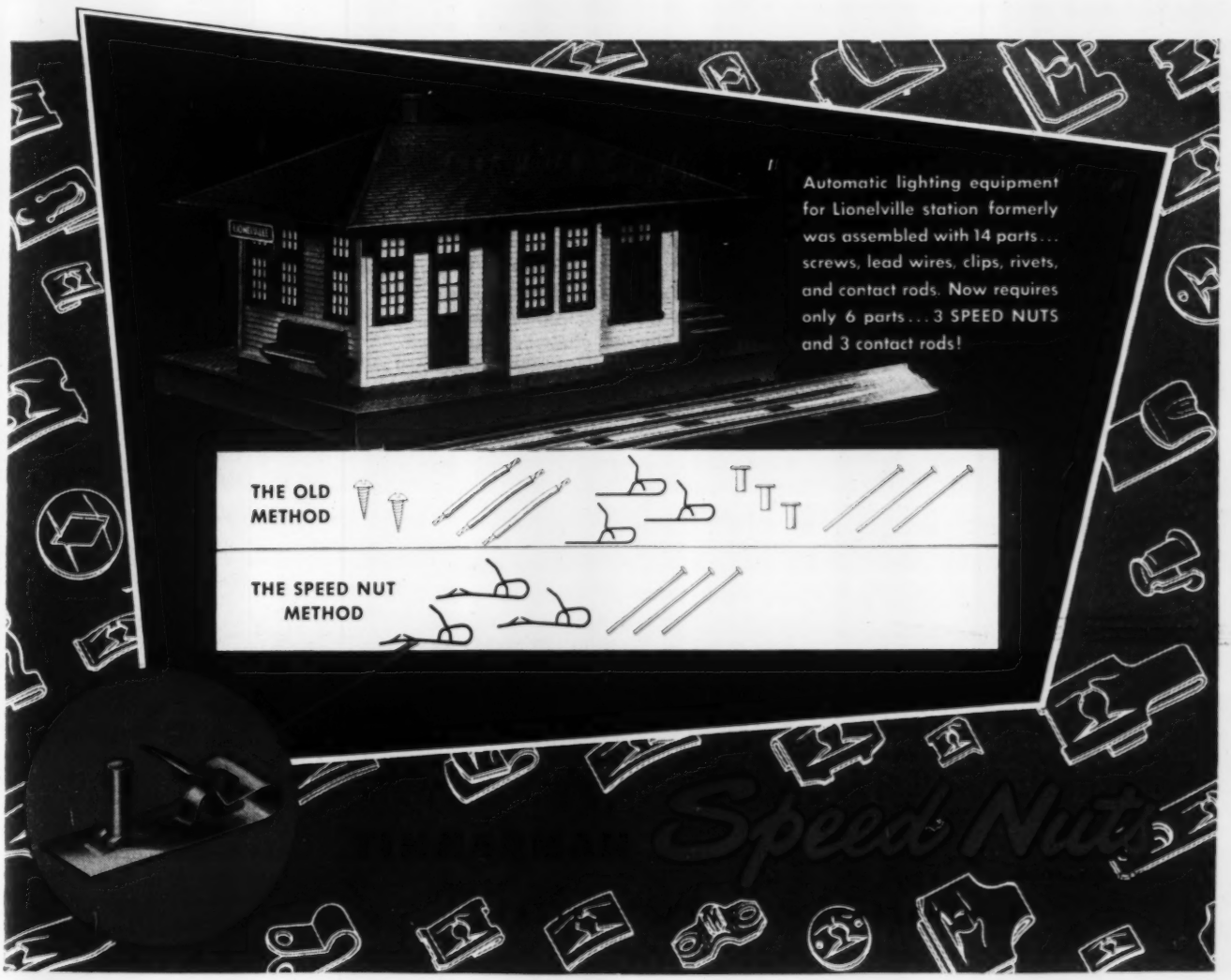
LIONEL "switches" to SPEED NUTS

...cuts assembly costs 46%

Special SPEED NUTS open "clear track" to savings for Lionel Corporation by eliminating 8 parts—speeding up bottleneck operation—greatly reducing assembly and shipping damage!

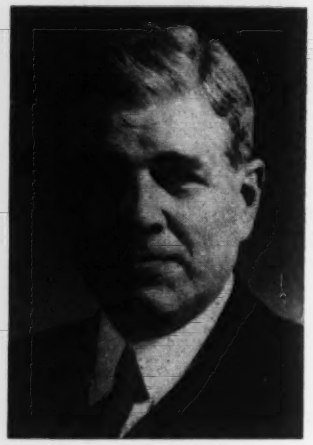
All this came about because Lionel engineers were looking for a simpler, better way to install automatic train control mechanism in "Lionelville" stations. Because of their long and successful experience with Tinnerman fasteners, they turned to SPEED NUTS for this assembly. As a result, 3 special multiple-function SPEED NUTS were designed to replace 11 of the parts then used. This simplified SPEED NUT assembly method accomplished the following: *46% assembly savings, 2% material savings, and 25% savings on assembly and shipping damage.*

Like Lionel, you may find that SPEED NUTS are the most economical, simplest, most reliable fastening method. Ready to supply valuable assistance are Tinnerman sales offices coast to coast. Phone today . . . meanwhile, write for your copy of SAVINGS STORIES. TINNERMAN PRODUCTS, INC., Box 6688, Cleveland 1, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton. In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales.


Automatic lighting equipment for Lionelville station formerly was assembled with 14 parts... screws, lead wires, clips, rivets, and contact rods. Now requires only 6 parts... 3 SPEED NUTS and 3 contact rods!
THE OLD METHOD
THE SPEED NUT METHOD
Speed Nut

Goodrich Co., Akron. He has been manager of latex foam product sales for the last 10 years.

Food Machinery & Chemical Corp. announces that effective Jan. 1 **Prof. William L. Campbell,** head of the Food Technology Department, Massachusetts Institute of Technology, will become a vice president of the corporation and assume executive staff duties at the company's home office in San Jose, Calif.



PROF. WILLIAM L. CAMPBELL
. . . new V. P., Food Machinery & Chemical

Thomas D. Jolly, vice president, Aluminum Co. of America, was elected president of the **American Standards Association,** New York. It will be his third one-year term as president. Mr. Jolly has been vice president in charge of engineering and purchases for Alcoa since 1942 and has been associated with the firm since 1915.

William G. Mahlman, supervisor of order analysis for both Edward and Nordstrom Valves, Divisions of Rockwell Mfg. Co., was promoted to sales office manager of **Edward Valves Inc.,** East Chicago, Ind. He succeeds **Herbert J. Rowe,** who was called back to the U. S. Marine Corps.

F. C. Gokey was elected executive vice president, **Highway Trailer Co.,** Edgerton, Wis. He has been with the firm 24 years.

S. C. McCann was appointed sales representative in Kansas and western Missouri for **National Radiator Co.,** Johnstown, Pa. His headquarters will be at 1004 Baltimore St., Kansas City, Mo.

Heading the Southern New England chapter, **Institute of Scrap Iron & Steel Inc.,** Washington, during the coming year will be **Robert Jacob,** Jacob Bros. Inc., Bridgeport, Conn., as president. He will succeed **Leo H. Dragat,** H. Dragat & Sons Inc., Hartford, Cohn. **William Schmiedel,** Michael Schiavone & Sons Inc., New Haven, Conn., was elected vice president, and **Charles O. McIntosh,** West Hartford, Conn., was re-elected secretary-treasurer.

Northern New England chapter, **Institute of Scrap Iron & Steel Inc.,** Washington, elected **Louis Gordon,** Samuel Gordon & Sons Inc., Chelsea, Mass., as its president for the coming year. Named as first vice president is **S. I. Edinburg,** Luria Steel & Trading Corp., Boston. **Harry Halperin,** Roxbury Iron & Metal Co. Inc., Boston, was elected second vice president.

Dr. A. L. Marshall was appointed manager, and **Anthony J. Nerad** assistant manager of the newly formed chemistry divisions of the research laboratory, **General Electric Co.,** Schenectady, N. Y. **Dr. Arthur E. Newkirk** was named assistant to the manager. The new group consists of five divisions. **Dr. William E. Cass** was named head of the organic chemistry division, with **Dr. John R. Elliott** as associate head. **Dr. Herman A. Liebhafsky** is head of the analytical chemistry division and is also acting head of the physical chemistry division. **Dr. Albert E. Schubert** heads the chemical process engineering division, while Mr. Nerad continues to head work on mechanical investigations.

Donald W. Douglas, president, Douglas Aircraft Co. Inc., Santa Monica, Calif., was elected chairman of the **Aircraft Manufacturers Council,** western region of the Aircraft Industries Association. He succeeds **La Motte T. Cohu,** president, Consolidated-Vultee Aircraft Corp., San Diego, Calif.

Nelson J. Leonard, long a representative of **Cleveland Tramrail Division,** Cleveland Crane & Engineering Co., covering overhead materials handling equipment in Washington state, was granted a franchise to cover the entire Northwest territory. His main office is in Seattle.

Lawrence E. Shea has joined the Pacific branch sales staff of **National Radiator Co.,** with headquarters in San Francisco.

Herman D. Moskowitz, Schiavone-Bonomo Corp., Jersey City, N. J., was appointed chairman of the liaison committee of the **Institute of Scrap Iron & Steel Inc.,** Washington. This committee was enlarged to serve as a task force to co-operate and consult with government agencies, on request, on phases of the defense program relating to iron and steel scrap.

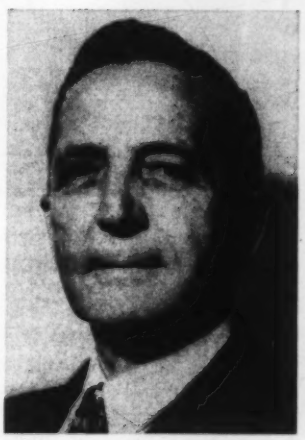
James Gerity Jr., president, Gerity-Michigan Corp., Adrian, Mich., was elected a director of **Doehler-Jarvis Corp.,** New York.

Sherrard G. Nott, Frank H. Nott Inc., Richmond, Va., was elected to head the Seaboard chapter, **Institute of Scrap Iron & Steel Inc.,** Washington. He succeeds **Joseph Shapiro,** Cambridge Iron & Metal Co., Baltimore. **Irvin I. Lazinsky,** Continental Iron & Metal Co., Baltimore, was elected vice president, and **Julian C. Cohen,** Julian C. Cohen & Co. Inc., Bladensburg, Md., secretary-treasurer.

Sol H. Rosen, president, Union Scrap Iron & Metal Co., Minneapolis, and Union Compressed Steel Co., Duluth, was re-elected president, Northwest chapter, **Institute of Scrap Iron & Steel Inc.,** Washington.

Riley Stoker Corp., Worcester, Mass., announces that **George W. Willmarth** is retiring after serving the company for 28 years as purchasing agent.

Electric Storage Battery Co., Philadelphia, announces election of officers for its newly established E S B International Corp., created to carry on its foreign business. **Edward C. Kline** is executive vice president and director; **John B. Clark** and **James E. Sheridan** are vice presidents and directors; **E. J. Dwyer** is secretary and director; **E. S. Malden,** assistant secretary-treasurer-comptroller; **C. E.**



EDWARD C. KLINE
. . . exec. V. P., E S B International

Murray and **C. F. Norberg,** directors; **D. N. Smith,** comptroller; and **E. W. Williams,** treasurer.

Named to new posts in the eastern sales division of **Caterpillar Tractor Co.,** Peoria, Ill., are **Lee L. Morgan, Dale S. Gronsdahl** and **L. W. Smith.** Mr. Morgan assumes district representative duties in New York, Vermont and New Hampshire. Mr. Gronsdahl transfers from the central sales division to district representative of sales for eastern Pennsylvania and New Jersey. Mr. Smith replaces Mr. Gronsdahl as district representative for Alabama and part of Tennessee. Mr. Morgan succeeds **G. R. Roelfs,** resigned to become sales manager for T. Southworth Tractor & Machinery Co. Inc., Albany, N. Y.

Howard Kuhn, associated with the forging industry for more than 30 years, has joined **Heppenstall Co.,** Pittsburgh, and is now a member of the company's sales department with headquarters in Pittsburgh. He has been sales manager, Camden Forge Co., Camden, N. J., which he joined in 1919.

Lee T. Craig was appointed vice president, **Steel Co. of Canada Ltd.,** Hamilton, Ont. He has been associated with the company for the last 30 years, serving in various capacities but particularly in the sales division, most recently as general sales manager at Hamilton.

Irving Bussel, Plainfield Iron & Metal Co., Plainfield, N. J., will head the New Jersey chapter of **Institute of Scrap Iron & Steel Inc.,** Washington. during the coming year. He succeeds **Paul Giordano,** Giordano Waste Material Co., Trenton, N. J.

IRWIN F. PINK
. . . Cambridge Wire Cloth exec. V. P.

Cambridge Wire Cloth Co., Cambridge, Md., appointed the following new officers: Executive vice president, **Irwin F. Pink;** vice president and general manager, **Edward N. Evans;** secretary and treasurer, **Nina E. Pink.** Mr. Pink joined the company in 1920 and has been vice president and general manager since 1942. Mr. Evans was secretary-treasurer. Miss Pink has been comptroller.

Robert G. Kenly was appointed general manager, **New Jersey Zinc Co.** and **New Jersey Zinc Sales Co.,** New York, effective Jan. 1. He will succeed **Ralph M. Neumann,** who is retiring due to health after 44 years of service with the organization. **Arthur E. Mervine,** assistant general sales manager, has also been advised by his physician to retire because of his health, but has agreed to continue until early next year.

J. P. Williams Jr. was appointed special representative in the Midwest for **Syncro Machine Co.,** Perth Amboy, N. J., manufacturer of wire drawing and cable making machinery. Mr. Williams, formerly a manufacturers' agent on the West Coast, has established offices at 20 N. Wacker Dr., Chicago. Prior to World War II he covered this midwest area for Syncro Machine.

Mark Berg, Berg Metals Co., Los Angeles, was elected president, Southern California chapter, **Institute of Scrap Iron & Steel Inc.,** Washington. He succeeds **Louis L. Colen,** Nathan S. Colen & Son, Los Angeles. **D. B. Rosenthal,** Eastern Iron & Metal Co. Ltd., Los Angeles, is vice president; **Louis Walter,** Acme Iron & Metals Co., Los Angeles, second vice president; **Paul Kearns,** Dulien Steel Products Inc., third vice president; and **Mack Cottler,** California By-Products Corp., Los Angeles, treasurer.

Henry A. Vaughn was appointed manager of manufacturing of the meter and instrument divisions of **General Electric Co.** at Lynn, Mass. Formerly superintendent of the specialty and standard instrument manufacturing divisions, Mr. Vaughn succeeds **Herbert L. Ross** who recently was named manager of the GE River Works at Lynn, Mass.

C. T. Botsford, founder and owner of **Chillicothe Iron Co.,** Chillicothe, Mo., for 40 years, will retire Jan. 1.

Joseph B. Horwitz was chosen to head the Northern Ohio chapter of **Institute of Scrap Iron & Steel Inc.,** Washington, for the coming year. He is president of Joseph B. Horwitz Co., Cleveland, and was re-elected to the chapter post.

OBITUARIES...

G. Walter Sanborn, vice president in charge of purchasing and traffic for **United Engineering & Foundry Co.,** Pittsburgh, died Dec. 15. He started his business career in 1902 with William Tod Co., Youngstown, which was purchased in 1917 by United Engineering.

Lon B. Best, 52, a sales representative, **Linde Air Products Co.,** in Milwaukee, was killed in an automobile collision Dec. 12. He had been with the firm 22 years.

Jacques Klerekoper, 64, special representative of the Washington office of **United States Steel Export Co.,** died Dec. 15 at his home in New York.

Cecil C. Garvin, 66, retired magazine engineer for the explosives department, **Hercules Powder Co.,** Wilmington, Del., died Dec. 13 at his home in Holly Oak, Del.

Rollin N. Van Der Vert, 51, Seattle sales manager, **A. M. Castle & Co.,** died Dec. 13 in Seattle. He was associated with Castle 31 years.

John S. Brown Sr., 63, assistant treasurer, **Jones & Laughlin Steel Corp.,** Pittsburgh, died Dec. 17. Mr. Brown had been with Jones & Laughlin for 48 years.

I. J. Stanley Jr., 55, manager of heavy chemical sales for **Monsanto Chemical Co.'s** organic division, Charleston, W. Va., died Dec. 12.

Robert A. Currie, 62, export manager, **Jeffrey Mfg. Co.,** Columbus, O., died Dec. 8. He had been with the company for 43 years.

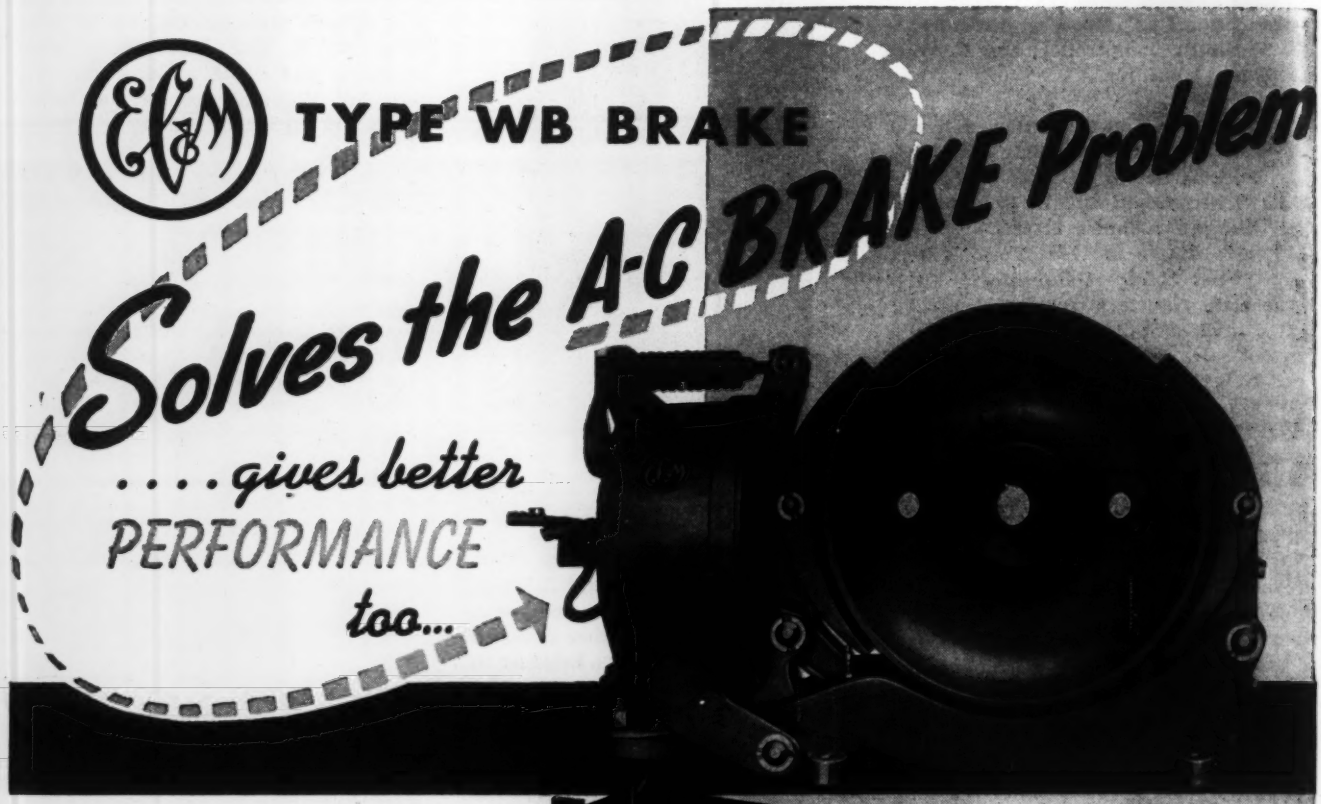
Henry M. Shaw, 80, pioneer radio inventor and founder of **Shaw Insulator Co.,** Irvington, N. J., died Dec. 10. He retired in 1940.

F. E. Craig, 80, former controller, **Westinghouse Electric Corp.,** Pittsburgh, died Dec. 16. He retired in 1931.

Ralph R. Brady, 55, commercial engineering department manager, lamp division, **Westinghouse Electric Corp.,** Pittsburgh, died Dec. 10.

TYPE WB BRAKE Solves the A-C BRAKE Problem

.... gives better PERFORMANCE too...



Rectifier - Unit in compact form for separate mounting on existing installations.

MANY users of a.c. motor-driven cranes, hoists and machinery are switching to the EC&M Type WB Brake with rectifier-unit. Its *high-speed performance* and *reduced up-keep* for a.c. circuits have prompted its nationwide acceptance. Repeat orders indicate standardization on the WB Brake wherever a.c. brakes are needed.

These brakes not only eliminate the laminated members required in a.c. brake design, but give quick response. High initial current insures *fast release;* automatic reduction of the holding current results in *fast setting.*

The rectifier-unit is compact and is arranged for separate mounting for existing installations. On new projects, it may be combined with the motor control panel. Bulletin 1006 gives complete details on WB Brakes for a.c. operation. Bulletin 1004-D describes them for d.c. service.

THE ELECTRIC CONTROLLER AND MANUFACTURING CO.

2698 East 79th Street — Cleveland 4, Ohio

REDUCED UP-KEEP *and* BETTER OPERATION

because

No laminated magnets or plungers.
No destructive hammer-blow.
No a.c. chatter.
No coil burn-out due to shoe-wear affecting air-gap.
No motors, gears or pumps.
Has fast release and fast set.
Has ability to permit accurate inching.
Has hand release.
Has solid cast-steel magnet and armature.
Has short armature-movement.
Has thick, molded brake blocks 1/4" to 3/4" thick.

On Cranes, Hoists and Machinery ...the EC&M Type WB Brakes *give* HIGH SPEED PERFORMANCE —REDUCED UP-KEEP

Production AND Engineering NEWS AT A GLANCE

CONFUSIN' BUT NOT AMUSIN'—Anyone who has walked past steel inventories in a large fabricating plant or by the storage racks in a modern warehouse must have been struck with the complexity of hieroglyphics and colors used to mark material of differing analysis and treatment for ready identification. A uniform marking system would erase much of the confusion and delay occasioned by widely varying symbols between mill, jobber and end-user. Nettled over the problem in the alloy field, some West Coast airframe builders have come out (p. 54) for "birthmarking" alloys at their mill source by continuous ink stamping.

ECONOMIC LESSON FOR TODAY: Columbium-bearing stainless steels are in critically short supply because of the scarcity of the stabilizing element. Therefore, many users have been forced to change specifications from type 347 stainless to a titanium-stabilized analysis conforming to type 321. The latter is approximately 4½ cents a pound lower in price but the catch is that machining is much more difficult. One case is reported where production between tool grinds was reduced to only 25 per cent of that realized with the columbium-bearing stainless. This, of course, means that net cost of a finished product might be even higher with type 321 despite its lower price.

NEUTRON-BUMPING MACHINES—You can't learn how to make an atom bomb by reading details of three types of low-power nuclear reactors developed by the nation's top atomic physicists over the past eight years, although the details of construction and operation (p. 57) of these "toy" units are fascinating enough, even to the average layman. As more became known of materials and techniques, the reactors became smaller and yet delivered more power. The Gleep, the Zeep and the Los Alamos water boiler will answer a lot of questions over what happens when a variety of metals are subject to radiation.

"MIGHTY" LUBRICANT—If you want to know why American jet planes are now flying higher and faster talk to Dr. Howard M. Elsey of Westinghouse. He developed a method of impregating carbon brushes—porous blocks of carbon that relay power to the plane's electrical system—with a special compound that promotes formation of a lubricating film to prevent harmful friction at high altitudes. At extremely high altitudes, carbon brushes must create their own lubrication; otherwise they will grind themselves to powder against the copper commutator, and the electric flow will stop. The new ingredient, belonging to the same family as table salt, provides a lubricating film so thin that two thousand layers of it would barely equal the thickness of a sheet of paper.

SIX-YEAR FIELD TEST—Laboratory data on the properties of materials often do not prove out in actual service, so the value of long-time service tests as a check cannot be underestimated. Thus, a look at a cast nickel-chrome-molybdenum steel valve (p. 66) after it had been in operation for six years subjected to high-temperature steam confirmed lab tests, showing no graphitization or loss of strength.

MIST IS FORGOTTEN—Objectionable mist rising from the use of special hob grinding machines at the Detroit plant of a manufacturer of gear generating equipment was a troublesome problem, since in a few days this vapor coated walls, ceiling lights and windows of the room. Installation of a fan only succeeded in coating window screens with oil and allowing it to drip down the face of the building. Solution was the installation of vapor collecting machines which have now been in use for over four years. The units clean the air of vapor and recirculate it to the room, saving sufficient heat to pay for the installation in five years, it is reported.

INCENTIVE ESSENTIAL—Standardization, basically a useful tool for greater efficiency, can easily be overdone to the point where it becomes nothing more than regimentation, stifling competition and discouraging improvements. Compulsory standardization in totalitarian countries has proved this. Effective standardization should meet three conditions: First co-ordination with and approval by all parties concerned, necessitating some compromise; second, stopping before it hampers further development or destroys incentive; and finally, sufficient flexibility to permit adjustments as changing conditions require.

DIRECT CASTING MOVES AHEAD—Continuous casting of slabs for subsequent rolling into strip now appears feasible (p. 68), while casting of oval billets for piercing into tubes has progressed to the point where commercial quantities are being processed. An interesting angle is the use of a television camera mounted some distance above the mold and sighted on its interior to give a constant check on the level of metal in the mold. The latter is an open-end water-cooled brass tube 30 square inches in cross section, delivering an oval 9 x 4½ inches.

BIRTHMARKING ALLOY STEELS

Would Save Time and Material

Universal standards for continuous ink stamping suggested as answer to current confusion over coding

AS DEFENSE mobilization moves from the planning to production stage, necessity for expediting material flow, together with its conservation, become paramount factors. One aspect is the uniform identification of materials in process from mill to end fabricator, so that warehouse stocking may be simplified and so that there may be a free interchange of materials between warehouse, prime and subcontractors.

Particularly in the processing of alloy steels is this a growing headache, accentuated by the extensive use of such steels in the manufacture of aircraft and aircraft engines. West Coast airframe manufacturers have been digging into the subject assiduously and have found appalling waste of time and material because of the lack of a universal system of marking alloy steels. They think the answer is some method of "birthmarking" with mechanized equipment at the source of manufacture.

Marking or coding of steel is a controversial subject, as old as the industry itself, and still in a highly disorganized state. Practice generally involves the manual attachment of tags, colors, stencils or printing, with about as many different arrangements and standards as there are producers, jobbers and users. One estimate is that under existing marking techniques, considering floor space, crane operations, man-hours, equipment and materials, the cost to producers may run as high as $4.75 per ton for alloy steel bars and tube.

Everybody Says Yes—The Western Regional inspection committee of the Aircraft Industries Association made a survey recently of the marking methods employed by various users of alloy steel, including tool and gear manufacturers, municipal engineering departments, steel jobbers, specialty manufacturers and aircraft builders. They drew three conclusions from their investigation:

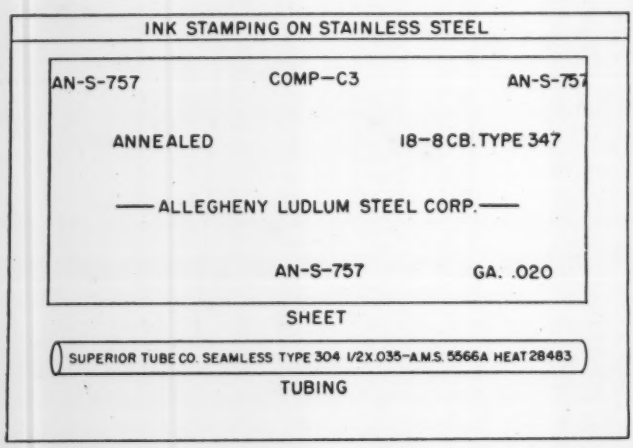
Systems of identifying alloy steels now in use are wasteful, inefficient and costly.

Co-operative effort is needed to lick the problem.

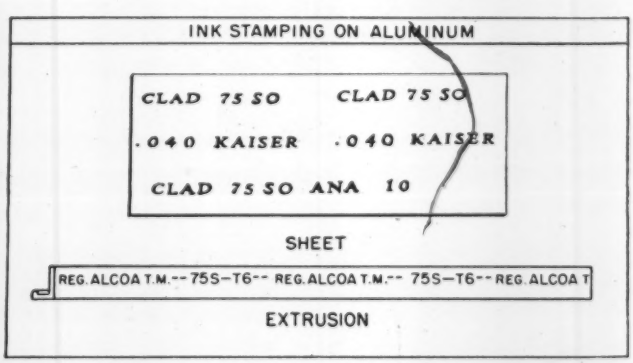
There is universal agreement that something should be done.

The survey also disclosed that many manufacturers subcontract a lot of their work, bringing in large numbers of smaller shops in the fabrication of specialized steel products. These smaller plants, in turn, handle work for many prime contractors, often receiving their steel from these sources. No little confusion results when alloy steels of the same basic specifications, but with entirely different color or other markings are received.

A comparison of the color coding of 17 types of



Typical example of ink-stamping identification on 18-8 stainless steel sheet and tubing (left), and 75S aluminum sheet and extrusion (below)



Mill stamping of identifying marks or symbols would be welcomed eagerly by jobbers wading through a morass of conflicting marking systems

rod and bar steel used by six different aircraft companies, for example, shows absolutely no uniformity in any single analysis. Thus one company paints SAE A-4130 with white-green-white squares, another with a green stripe having an orange X at either end, a third with a red stripe crossed by black at the center, a fourth with a blue strips surmounted by a black A, a fifth with a brown square, and a sixth with adjoining blue and green squares. The hopelessness of subcontractors trying to keep track of the same material from these six sources is readily understandable.

Much the same situation prevails in warehouses. A check on three different jobbers, for instance, shows one marking SAE A-4140 annealed purple and brown, another black and white, and a third black and brown.

Although the aircraft industry uses a minute portion of the alloy steel consumed in all U. S. industry, the proper identification of the steel it does use is of extreme importance. The material must be readily identifiable as to type and condition all the way through the manufacturing process. Steels which have lost their identity either must be discarded or subjected to thorough laboratory chemical analysis and physical test. This brings the ultimate cost out of all proportion to the tonnage being consumed.

Color Crazy—Most jobbers and some steel producers used systems of color coding. Actually, there are not enough colors in the spectrum to cover every type of steel and the various conditions in which it is supplied. Years ago when the Bureau of Standards published its color code for marking steel bars (Simplified Practice Recommendation R166-37) only 89 of the 140 SAE chemical compositions then in existence were listed for identification. The standard was a flop, despite the fact it was formulated by a committee on which most major steel mills and users were represented. Six years ago, Earle C. Smith of Republic Steel was quoted as saying that there were over 5000 types of steel in what he called the "working group."

Color coding, because of its infinite variety and manual application, is complicated and tedious, therefore expensive. Beyond that it is confined largely to chemical analysis and today more needs to be known about steel than its chemistry. A considerable amount of material is being purchased to hardenability (H) specifications. Information on gage and size is desirable, as well as the mill source. Steel heat numbers usually are important; perhaps also the military specification involved.

So, like the weather, everybody is talking about the matter but there seems to be no concerted action toward a solution.

It is reasoned, and probably correctly so, that steel producers have more information on the problems of marking steel than anyone else and hence might well impose on their customers a universal method of "birthmarking" alloy steels, or even all steels. Ramifications of the suggestion are many. Users of the alloy steels might have to relinquish at least some of their individualistic tendencies in the interests of solving the overall problem.

Steelmakers have indicated that the necessary equipment for marking their products is available and, in fact, most of them are now overburdened with a variety of marking devices necessary to furnish all the symbols and marks required by different users. A single system of coding thus would simplify the mills' job.

The simplest method of marking steel is believed to be that already in use to identify stainless steel sheets and tubing (as illustrated). Extension of this ink stamping system to other alloys should not be too difficult. Aluminum producers use a similar method of identifying sheet, extrusions and other forms. The two systems have eliminated many of the difficulties which earlier had plagued producers, jobbers and users of stainless and aluminum alloy.

Single Standard Urged—Continuous ink stamping of all shapes of alloy steels should include the manufacturer's name or symbol, heat number, condition, specification and thickness or gage, if possible. Plac-

ing the specification number on alloy steel immediately focuses attention on the fact that only one specification number should be used and as a consequence it is felt that steel producers should persuade users to accept a single standard of specifications. This would be of considerable benefit to all concerned.

At present, manufacturers supplying fabricated steel products to the government agencies, particularly the military, are required to receive and have readily available chemical analyses and physical properties of steels used in these products. Here again continuous ink stamping at the mill might eliminate a considerable amount of duplicate paper work. As it is now, the producer supplies physical and chemical test reports to the jobber who is undoubtedly buying from more than one source and selling to many different outlets; consequently test reports must be duplicated indefinitely. Mill-stamped steel would carry its own physical and chemical identity through the heat number and would require only that the mill retain analyses of each heat. Air Force and Navy purchasers of aircraft have indicated that under such conditions they would relieve manufacturers of the necessity of obtaining and filing physical and chemical test reports.

There are available several types of automatic printing devices built integrally with mill production equipment, specifically designed for continuous legible ink printing on the products. They include conveyor mounted printing wheels, power and friction driven; reciprocating power presses synchronized with material flow; auxiliary printing machines attached to existing equipment and utilizing inherent movements of such machinery as shears, rolling mills, straighteners and the like, at either hot or finishing departments.

One estimate of the cost of automatic printing, based on mill production of 50,000 tons of bars or tubes per 40-hour week, shows the following:

	Three-year cost
Original equipment installation	$30,000
Auxiliary equipment (spares)	7,500
Printing dies @ $300 per week	46,800
Printing inks @ $1500 per week	234,000
Ink solvents @ $100 per week	15,600
Maintenance @ $560 per week (labor)	87,360
Replacement parts @ $150 per week	23,400
Total	$444,660
Total tonnage	7,800,000
Unit marking cost	$0.057 per ton

Summing up, the following conclusions may be drawn from the aircraft manufacturers' survey and accompanying report:

1. There is an imperative need for an integrated marking system on alloy steels.

2. Producers and users of alloy steel have much to gain from simplification of present marking systems.

3. Consolidation of the specifications established by users of alloy steels is both urgent and possible, and should conform to the requirements for continuous ink stamping.

4. It is believed that steel producers are best able to "sell" their customers on continuous ink stamping as an accepted identification method.

5. Any continuous ink stamping system should include the following details on the product: Manufacturer's name or symbol; specification of the steel; condition of the steel; heat number, and thickness if possible.

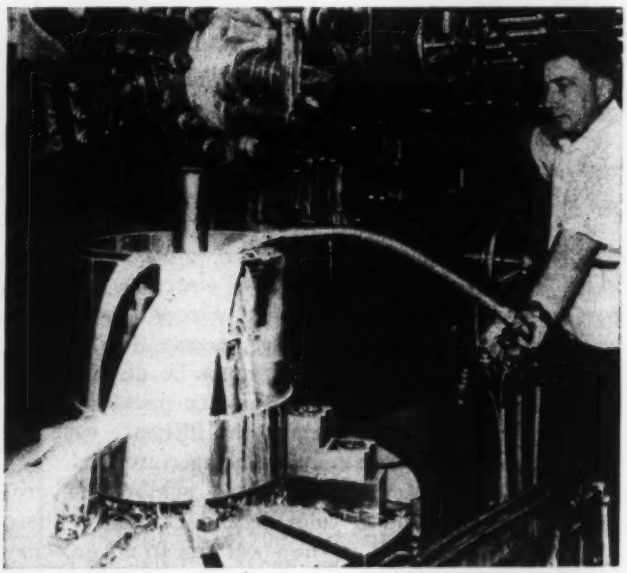
(A company supplying continuous ink stamping equipment suitable for the foregoing application is the Pannier Corp., Pittsburgh 12.)

New Paint Finishes Introduced

Three new alkyd paint resins have been introduced by General Electric Co., Pittsfield, Mass. Resin 2522 is a fast-drying, hard, tough resin said to combine excellent adhesion and gloss and color retention with chemical and weather resistance and flexibility. Its application includes heat-resistant paint for stoves, air-drying finishes for room interiors and other similar uses.

Designed for architectural applications, including interior gloss enamels, furniture and exterior enamels, is resin 7300, a general purpose alkyd with improved gloss-retention. No. 7310 is a rapid tough-baking vehicle for industrial pipe finishes, reported to have good weather resistance, increased color-retention and application for farm machinery, machine tools, etc. This paint resin may also be used for air-drying enamels.

No Smell, No Germs

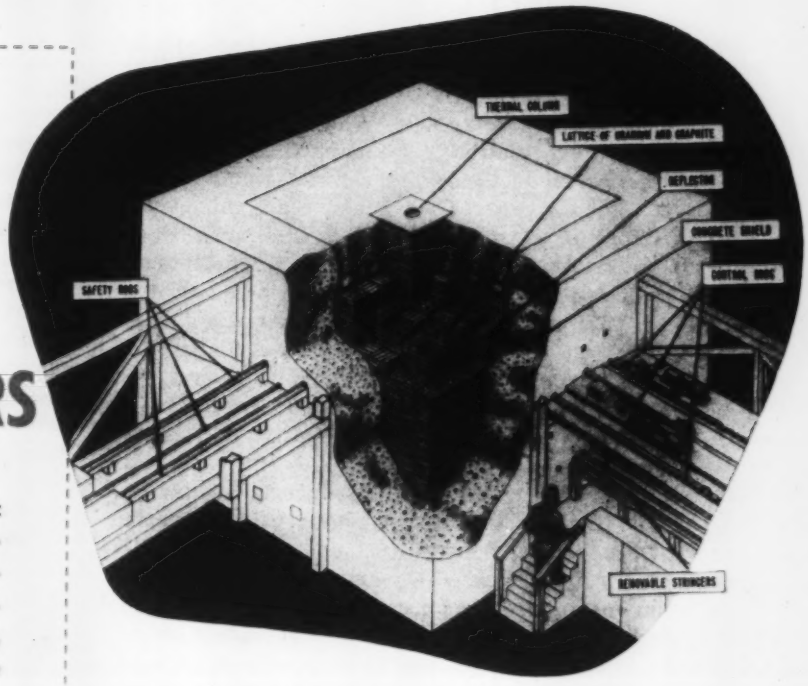


A preservative for soluble-type cutting oils and coolants is touted as being effective against development of rancidity and obnoxious odors. The formula inhibits growth of bacteria, stabilizes the emulsion and preserves lubricating qualities of the oil for its full life. Cases are reported where normal use of coolants has been increased from two or three days to a period of several weeks. Where municipal sanitary codes are in effect to govern the disposal of spent cutting oils in public sewers or streams, the problem may be eased since bacteria counts are kept to a minimum. It is effective in a solution of only 1 gallon to each 1200 gallons of prepared soluble cutting oil. Above is an application at the Philadelphia division of Yale & Towne Mfg. Co. on a vertical boring mill machining electric truck motor cases.

Wraps Taken Off

LOW-POWER NUCLEAR REACTORS

To speed training of technicians for atomic energy development, details of uranium-graphite, uranium-heavy water, and homogeneous types of energy piles are disclosed. Large quantities of aluminum, cadmium, lead, graphite and concrete are required



Sketch of graphite-moderated low-power nuclear reactor, core of which consists of a cube-shaped pile of graphite into which lumps of uranium have been imbedded in a lattice-type pattern. The safety and control rods are cadmium

FIRST release of technical information and photographs of low-power nuclear reactors used for research purposes has been made by the Atomic Energy Commission in this country and by the governments of the United Kingdom and Canada. They reveal the extreme caution taken in details of construction and shielding and give a hint as to what these problems must have been in building the full-scale reactor plants for production of atomic weapons. Stainless steel, aluminum, cadmium, lead, concrete and high-purity graphite all have played a dominant role in the construction of these reactors.

The world's first nuclear reactor, which proved the theory of uranium fission, was constructed from uranium and graphite, being erected in 1942 under the west stands of the University of Chicago's Stagg Field. Mention of it was made in STEEL's article, "The Facts About Atomic Energy," published Oct. 1, 1945. Subsequently the reactor was dismantled and a modified version erected at the Palos Park side of the Argonne National Laboratory near Chicago. One like it was built by the British at Harvell, England, and is known as the Gleep reactor.

Another low-power reactor, comprising uranium rods suspended in "heavy" water, is located at the DuPage county site of the Argonne Laboratory. British-Canadian counterpart, known as Zeep, was erected at Chalk River, Ont.

Two Models Operated—The latest type plant, called the Los Alamos water boiler, is located at the Los Alamos Scientific Laboratory in New Mexico. It is a homogeneous chain reactor using as fuel an enriched uranyl salt solution in water. There have been two versions—a low-power model (LOPO), completed in 1944, which developed maximum power of about 50 milliwatts; and a high-powered model (HYPO), also completed in 1944 and operated successfully for several years with peak power of about 6 kilowatts. It is the smallest and most economical type of chain reactor so far built and has been used primarily for physical experiments requiring a concentrated source of neutrons.

The heart of the water boiler is a 1-foot spherical stainless steel container, illustrated herewith, filled with a uranyl nitrate solution in water (known to Los Alamos scientists as "soup"). Uranium in the uranyl salt contains about one part of fissionable U-235 isotope to six parts of nonfissionable U-238, compared to ordinary uranium which contains one part U-235 to 140 parts of U-238.

Surrounding the steel container is a reflector, or tamper, consisting of an inner core of beryllium oxide supplemented by a shell of graphite. The reactor and tamper occupy a cube about 5 feet on a side. A considerable amount of shielding is necessary to protect operating personnel. This is shown in an accompanying sectional drawing, and includes 4 inches of lead, 1/32-inch of cadmium and 5 feet of poured concrete.

At the front or working face of the reactor a square tunnel pierces the shield. This tunnel was plugged with graphite to form a "thermal column" and a number of ports for experimental irradiations were placed in the column and the tamper. A 1-inch tube also extends through the shield, tamper and through the reactor sphere itself. Los Alamos technicians refer to it as the "glory hole" and it permits materials to be irradiated at the highest neutron flux level.

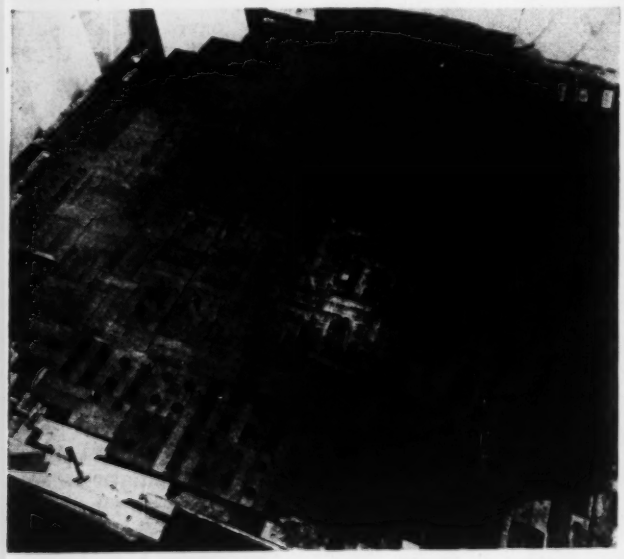
A six-turn cooling coil of ½-inch tubing and having effective length of 157 inches is wound in the form of a helix inside the sphere. About 50 gallons of water

per hour is pumped through the system, sufficient to permit year-'round operation at 6 kilowatts.

Explosive Gases Flushed — When operating, the water in the fuel solution is decomposed by the highly ionized fission products forming about ½ cubic foot of hydrogen and oxygen gas per hour. Since this chemical mixture is extremely explosive and also since highly radioactive gases are produced in the fission, some means of diluting and flushing out the gases was required. This was accomplished by means of a double inlet-outlet tube welded to the top of the sphere. Air is pumped through the inner ¼-inch tube and exhausted through the outer ¾-inch tube. The inner tube may be raised or lowered so that it acts as an indicator of the solution level. Copper-constantin thermocouples for measuring temperatures are placed in a tube extending into the center of the sphere and connected to the water inlet and outlet tubes.

Control is by means of a cadmium shim rod, two cadmium control rods and a cadmium safety rod. The latter always remains out during operation since it is used only to stop the chain reaction in case the intensity should go too high. For additional safety, the two control rods are designed with a release mechanism so that they can stop as well as control the reaction. If both control rods and safety rod are dropped at the same time, the neutron intensity falls 85 per cent within 1 second.

All operations necessary to starting, running and stopping the reactor are done from the control desk located in a room adjacent to that containing the reactor. Indicator lights and various warning signals aid the operator in controlling the unit and locating difficulties. With an inlet water temperature of about 45° F and 1.9 pounds of U-235 in the boiler, the reactor could run continuously at 5.5 kilowatts without exceeding a solution temperature of 185° F, if this should become necessary. At this power level, some excess reactivity is available for experiments on materials which absorb neutrons.



Only photograph made during construction of the first nuclear reactor at the University of Chicago in November, 1942. Eighteenth layer, almost covered here by "dead" blocks, contains uranium slugs spaced uniformly in drilled blocks. Fifty-seven layers brought the reactor to critical stage

What Makes It Tick—Principle of operation of a nuclear reactor is this: If in a mass of uranium one neutron by collision with another causes a fission to occur, resulting in the formation of two or more neutrons, it is conceivable that the number of fissions may increase steadily with the consequent release of large amounts of energy. However, there is a great competition for these neutrons and the question of whether a chain reaction does or does not take place in a given structure depends upon the result of competition among four processes: (1) Escape of neutrons to the outside; (2) nonfission capture of the neutron by uranium; (3) capture of the neutron by impurities in the construction materials; and (4) fission capture of the neutron by uranium. Thus, if the number of neutrons created by the fourth process exceeds the loss due to the other three then a chain reaction will occur.

Relative chance of fission capture depends upon the speed at which the neutron travels, the chance increasing if the neutron is traveling slowly. Fast neutrons are slowed down in passing through materials of low atomic weight—hydrogen, deuterium (heavy hydrogen), beryllium and carbon all being effective "moderators."

Rebuilt in 21 Days—For the record it may be well to review a few details of the rebuilt uranium-graphite reactor at the Argonne Laboratory's Palos Park site. Operation of the old East Stands unit was terminated Feb. 28, 1943, and the equipment dismantled and moved to the new location where it was reconstructed and provided with a radiation shield. The work was rushed through in 21 days because important information was required for the design of plutonium-producing reactors to be erected at Hanford, Wash.

The rebuilt reactor, illustrated by perspective drawing, looks like a large windowless two-story square concrete building. External measurements are: Width 30 feet, length 32 feet and height 21 feet. A small laboratory has been built on top, in which experimental work can be performed, using radiation generated within the pile. Inside the 5-foot concrete wall is the reactor core, a cube-shaped pile of graphite into which lumps of uranium have been imbedded according to a predetermined lattice-type pattern. The top of the graphite-uranium pile is covered with 6 inches of lead and about 4 feet of solid wood.

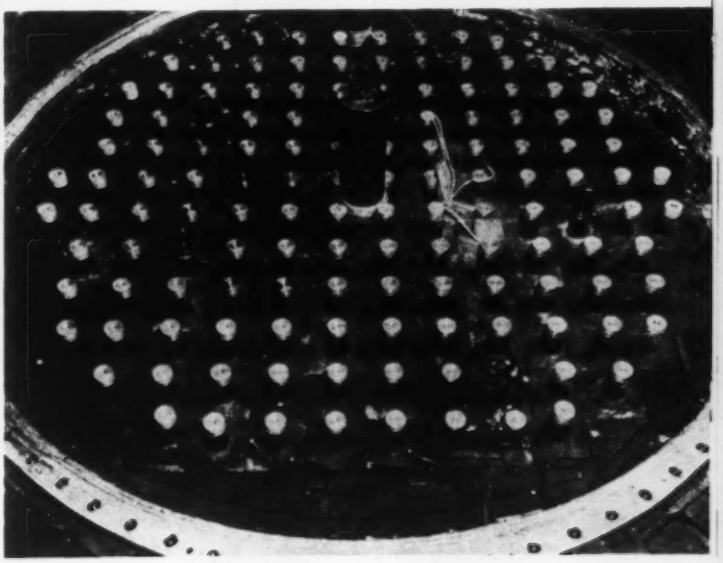
Concrete walls were poured first with the front and top open, leaving a vault in which the reactor proper could be built up, layer by layer, in a space 22 feet long and 20 feet wide. Basic construction unit for the pile was a graphite block 4⅛ x 4⅛ inches in size. Length of the blocks varied, most being 16½ inches. Cylindrical recesses spaced 8¼ inches from center to center were cut in the blocks and uranium cylinders 2¼ inches in diameter and weighing about 6 pounds inserted into these recesses. Blocks prepared in this manner are called "live" blocks while others containing no uranium and used as spacers are called "dead" blocks.

To reflect stray neutrons back into the reactor core, the uranium bearing material was surrounded on all

sides by at least 12 inches of dead graphite. The reactor became chain-reacting or critical at the fiftieth layer. An additional four layers of dead graphite then was added above the fiftieth layer to complete the reflector across the top.

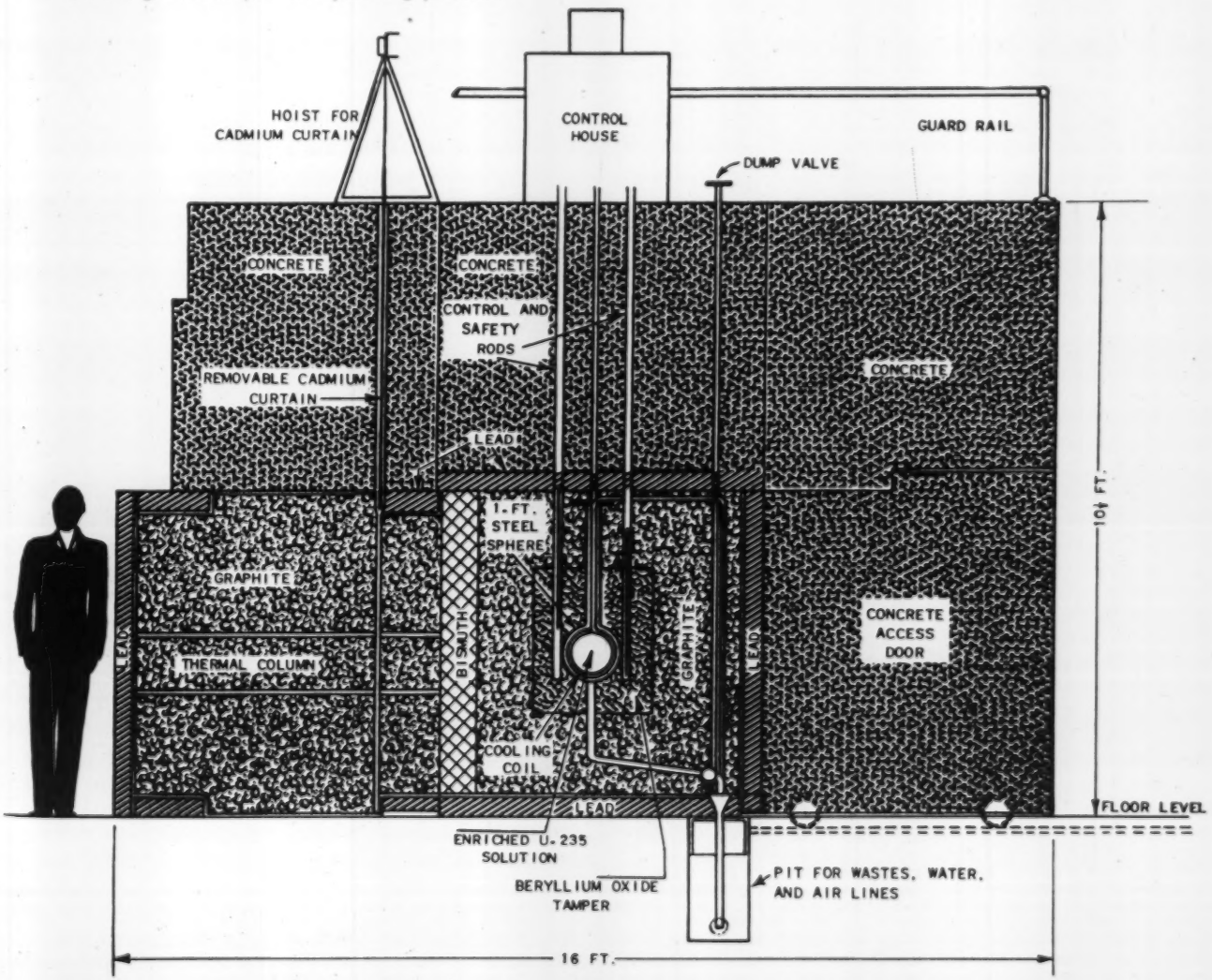
Substitute Uranium Oxide—Because of the relatively small amount of uranium metal available at the time, a large number of the recesses were filled with uranium oxide. To use the available metal in the most efficient way, it was placed in the center and was surrounded with the uranium oxide lumps. Accordingly, live graphite pieces containing about 10 tons of metal lumps were piled in layers to form a central lattice mass about 13 feet wide, 10 feet deep and 10 feet high, this mass being positioned between the sixteenth and forty-eighth layers.

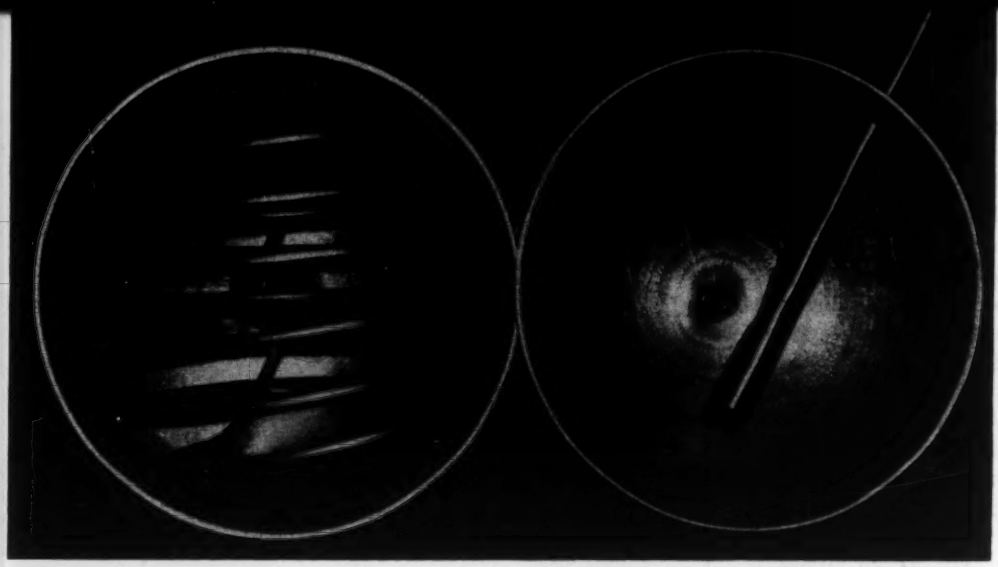
The reactor contains about 3200 lumps of uranium metal weighing 10 tons. Some 14,500 lumps of uranium oxide were used, bringing the total amount of uranium in the reactor to around 50 tons. Weight of graphite is about 472 tons and total weight of the



Top of the core of heavy water reactor, with shield removed to show ends of uranium rods. Large object at center is experimental thimble extending nearly to the bottom of the aluminum tank. Materials to be made radioactive are lowered into it

Simplified schematic drawing of the Los Alamos water boiler, a homogeneous reactor with enriched uranyl nitrate solution contained in a spherical stainless steel tank. Observe the unusual amount of shielding used to protect operating personnel





Two halves of the 1-foot stainless steel sphere which is the heart of the nuclear water boiler. Stainless steel cooling coil carries off heat generated in the fission process, while the 1-inch tube, called the "glory hole" is welded horizontally through the sphere to permit materials to be placed in the region of highest neutron flux

reactor, including core, reflector, shield and lead top is in excess of 1400 tons.

World's First Heavy Water Pile—In comparison with graphite-moderated reactors, the heavy water or Zeep pile is quite small. Construction of this unit at the DuPage county site began in September, 1943, and it was operated at low power on May 15, 1944. It comprises an aluminum tank 6 feet in diameter and 8 feet 10 inches high, filled with approximately 6½ tons of heavy water (the amount contained in 32,000 tons of ordinary water) and in which are suspended 120 uranium metal rods 1.1 inches in diameter and 6 feet long.

The metal rods, whose total weight is nearly 3 tons, are arranged to form a square lattice with the distance from center to center being 5⅜ inches. Heavy water, present in ordinary water as one part in 5000, serves to slow down the speed of the neutrons just as does graphite in the reactor just described.

Heavy water, which is tremendously expensive and requires a complicated plant for its separation, is more effective than graphite in slowing down neutrons and does not absorb them as readily. To remove the heat created in the fission process the heavy water is circulated through a heat exchanger.

The reactor tank rests on a 2-foot layer of graphite blocks supported by the concrete pile foundation. This reflects neutrons to the core. A 4-inch shield of lead-cadmium alloy surrounds the graphite reflector, which cover the sides as well as bottom of the tanks, and fits snugly against a thick concrete shield encasing the entire unit. The alloy protects the concrete from exposure to neutron and gamma ray radiation. A 1-foot shield of lead bricks is placed on top of the graphite reflector and is continued over the top plate of the reactor tank. Between the bottom of the lead cover and the top plate of the tank is a thin layer of cadmium sheet.

Space between the heavy water and the cover of the tank is filled with helium. This inert gas replaces ordinary air which would normally be present and which must be kept out of the system. Moisture in the air would be condensed inside the reactor tank and would dilute the rare and expensive heavy water. Another objection to air is that since the atmosphere is four-fifths nitrogen radiation bombardment of air would result in the formation of nitric acid.

Two blower pumps circulate the helium through a cooler and through a catalyst chamber. These pumps, one of which is normally for stand-by purposes, circulate both the helium gas and dissociated heavy water. Under neutron bombardment heavy water molecules break apart to form oxygen and heavy hydrogen (deuterium), and these gases are recombined in the catalytic chamber.

Fast Transfer by the "Rabbit"—In many experiments, materials made radioactive in the reactor must be removed in a short time. To speed their insertion into and removal from the reactor, materials which lose their radioactivity after a few seconds travel in a pneumatic tube arrangement called the "rabbit", built into one of the 11 openings passing through the concrete shield. Materials to be irradiated are placed in small plastic cylinders and are shot in and out of the reactor, using helium gas to furnish the push.

In addition to the 11 openings in the sides, an opening known as the central experimental thimble extends from the top of the reactor into the heavy water. This opening his been made by extending a 4-inch aluminum pipe from the center of the top shield through the tank lid and down to within a foot of the aluminum tubes through which various samples may be lowered into the center of the reactor for exposure to fast and slow neutrons. Thirty-two irradiations may be performed simultaneously.

The heavy water reactor is equipped with two control rods, two safety rods and three shim rods, all containing cadmium metal so they will absorb neutrons and stop the chain reaction. Safety and control rods are formed of a 3½-inch tubular sandwich of 1/32-inch of cadmium and two aluminum tubes.

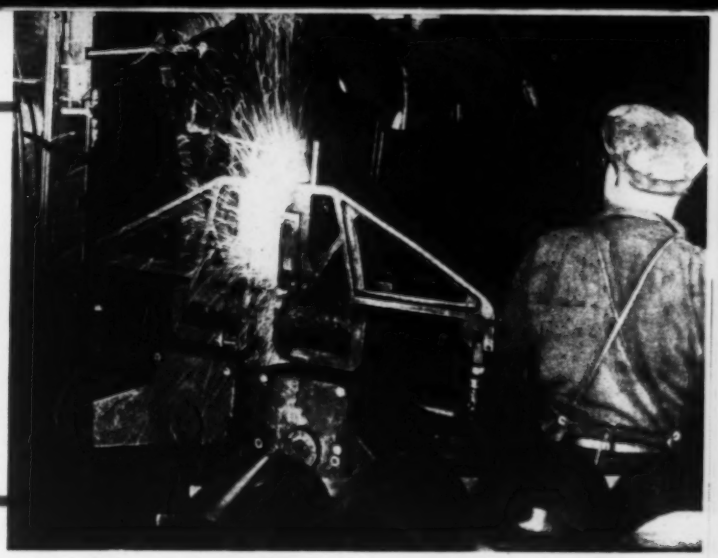
Release of information on low-power reactors was agreed upon as a means of speeding the training engineers and technicians in the field and thereby hastening atomic energy development, particularly for peacetime applications. The information will be of no value to rival nations in the development of military applications of atomic energy.

Published Dec. 4 was a *Sourcebook on Atomic Energy,* by D. Van Nostrand Co., New York. It is a 546-page volume, written by Dr. Samuel Glasstone, scientist, author and consultant to the Atomic Energy Commission. Priced at only $2.90, it is a comprehensive review of basic nonsecret atomic energy information, suitable for use by anyone interested in the scientific and technical aspects of atomic energy.

AUTOMATIC WELDING

Keeps Transformers Flowing

Meeting the huge demand for miniature power converters to change high-voltage rural current into farm electricity, Westinghouse designed its transformers for production-line fabrication by flash, seam, projection and spot types of welding



Cylinders are fed into a welding machine where the butting longitudinal seams are flash welded in a matter of seconds

AUTOMATIC resistance welding plays a principal role in Westinghouse's successful efforts to mass-produce transformers to convert high-voltage rural power-line current into usable farm electricity. The miniature power converters were designed to be made on a production line basis, employing mostly automatic, electronic operations including flash, seam, projection and spot welding.

Manufacturing steps at the company's Sharon, Pa., plant begin with rolling cylinders out of flat steel sheets. These cylinders are fed into a welding machine where the butting longitudinal seams are flash welded in a matter of seconds. A stripping machine then removes the resulting excess metal. The cylinder ends are flanged to accommodate tank top and bottom.

Multiple-Die Welders — Proceeding to a battery of projection welding machines, the tank undergoes welding operations which fuse on the ground stud and nameplate pad, hanger lugs, lifting lugs and the mounting pad, using multiple-die welders.

Certain models need seam welded bushing pockets. These are effected by a welding head that can be rotated 360 degrees to permit circumferential as well as longitudinal seams.

Transformer core and coil assembly is retained securely in place by brackets projection welded to the tanks interiors.

Method used to make the initial spot welds and final longitudinal seam welds that bond the V-shaped cooling fins to the tank wall. Uniform bonding along the entire length of the fin assures adequate heat transfer the transformer will demand. Not all transformers require these cooling fins

Double-Rolled Bottoms — Tank uppers (on some models) are attached to the main tank cylinder by circumferential seam welds. Tank bottoms are installed by a double rolling process and cover assembly studs are multiple-die projection welded. From the production standpoint, company engineers point to resistance welding as restricting warpage to the absolute minimum and as being productive of a high degree of tank shape control. The degree of air-tightness which prevents air from contaminating the insulating oil, is an index to transformer performance.

Tank uppers (on some models) are attached to the main tank cylinder by circumferential seam welds

Costs Down 86%—Manufacturing costs, too, are substantially reduced by the use of resistance welding. Longitudinal edge seam welding of the rolled sheet metal that forms the tank, for example, replaces four operations: Fitting, tacking, welding and grinding. An 85 per cent time saving is thus effected.

Other savings:

Hanger lugs	88.9 per cent
Lifting lugs	89.2 per cent
Tank upper section	84.9 per cent

Average total time saving on just four operations is 86.55 per cent.

Liquid Flux Technique Reduces Dross Formation

Coating surface of work in transit between pickling and galvanizing departments with zinc ammonium chloride protects against iron corrosion and minimizes production of dross. Long submersion time traceable to various factors

By WALLACE G. IMHOFF
President
Wallace G. Imhoff Co.
Encino, Calif.

DROSS is a metallic sludge that accumulates in the bottom of a galvanizing pot. The deposit is removed with a spoon and after draining is cut, sliced and vibrated and then sold to smelters for the reclamation of zinc contained therein.

Dross production is in direct proportion to the work passing through the galvanizing bath, but varies through a wide range according to the kind of base metal and the surface area. Other features such as rolling, forging, casting, etc., involved in the mechanical treatment, also are of importance; soft cast metals in the form of malleable iron fittings give a much higher dross production than rolled steel articles.

Careful research investigations have definitely established the fact that any corrosion that is permitted to form on the surface of the work between the pickling and galvanizing operations is a source of creating iron in the form of iron oxides. These oxides, upon entering the molten zinc bath, are immediately attacked and reduced by the molten zinc, creating both oxide skimmings from the oxygen released, and dross from the iron in the corrosion product.

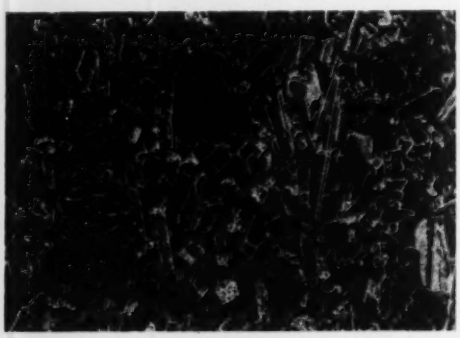
Iron that is permitted to enter the galvanizing bath in any form, either as the base metal of production, or as iron corrosion after pickling, or as iron salts carried over from the pickling baths, eventually finds its way into the zinc-iron alloy dross which settles to the bottom of the pot. Corrosion after pickling is one of the most prolific sources of iron in dross formation. A clean surface may be ruined by drying or by allowing the work to stand for long intervals before galvanizing.

Pieces handled in baskets sometimes find their way to bottom of kettle to form dross

Overproduction will greatly increase dross production as will a pot where the heat application is badly out of balance. As a direct result of over-production, the operating temperature will be too high, and this also is a direct cause of excessive dross production. All galvanizing installations have a correct rated production capacity, and when production is carried in excess of this rated capacity, overheating results, and this in turn creates excessive dross.

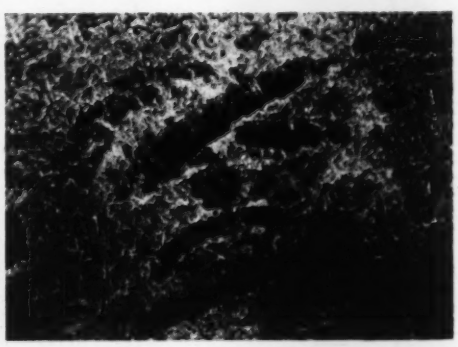
Poor galvanizing furnace design may be considered from at least three different angles:

1. Improper heat application which may cause general overheating, or concentration of high heat intensity on some particular spot or part of the pot.
2. Improper location of the flues which may draw

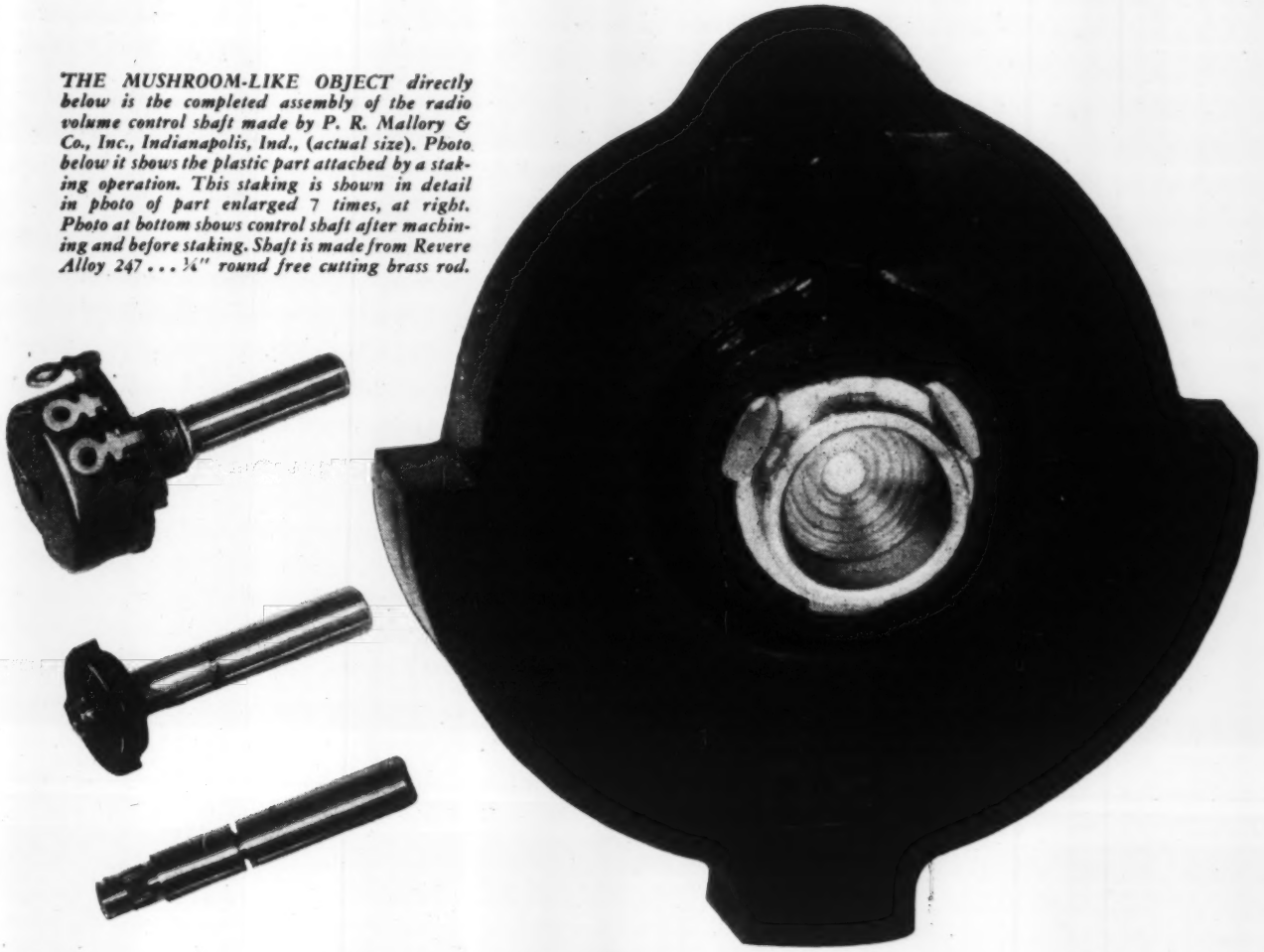


Left—Ordinary dross containing 3.54 per cent iron (X36)

Right—Iron oxide (black areas) being converted into dross (X36)



THE MUSHROOM-LIKE OBJECT directly below is the completed assembly of the radio volume control shaft made by P. R. Mallory & Co., Inc., Indianapolis, Ind., (actual size). Photo below it shows the plastic part attached by a staking operation. This staking is shown in detail in photo of part enlarged 7 times, at right. Photo at bottom shows control shaft after machining and before staking. Shaft is made from Revere Alloy 247 . . . ¼" round free cutting brass rod.



BY SWITCHING TO REVERE FREE CUTTING BRASS ROD P. R. MALLORY & CO., INC.,

SAVES ON 2 COUNTS!

Staking operation on radio volume control shaft performed without fracture . . . annealing operation eliminated.

The solution to the Mallory Company's problem was not as easy as it might appear. It was not simply a case of Revere Technical Advisory Service recommending ¼" round, free cutting brass rod. That rod had to possess the machinability to match Mallory's existing production machine set-up and at the same time be sufficiently workable so that annealing, prior to staking, could be eliminated; and that staking be accomplished without fracturing the metal.

After consulting with the Mallory Engineers, and discussing the tests which Mallory would subsequently conduct, Revere recommended a ¼" round, half hard riveting and turning rod mixture 247. Working tests made by Mallory showed this rod to possess all the necessary requirements.

As a result of those tests, P. R. Mallory & Company is now using this Revere free cutting brass rod to its complete satisfaction for the radio volume control shafts it manufactures. Not just any ¼" brass rod, but the *right* rod made it possible for them to save on 2 counts.

Perhaps Revere has a brass, a copper or some special alloy to help you in the development or improvement of your product . . . in cutting your production costs. So why not tell Revere *your* metal problems? Call the Revere Sales Office nearest you today.

REVERE

COPPER & BRASS INCORPORATED

Founded by Paul Revere in 1801

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• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
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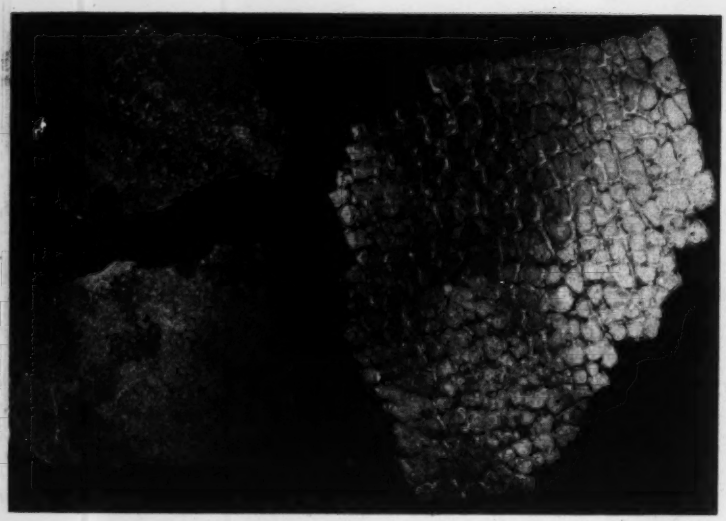

Zinc-iron alloys removed from the top and middle walls of kettle

the heat down into the dross area of the pot thereby greatly exaggerating and intensifying the dross forming conditions.

3. Excessive dross production due to unbalanced heat input in the relation between the production, metal capacity of the pot and side heating area.

Where dross is excessive and the zinc used does not carry any lead, the dross production is lowered by either putting pig lead into the pot, or purchasing metal with approximately 1 per cent of lead in the slab zinc.

No practical method has been developed to stop dross formed due to the iron dissolved from the surface of the work as it is galvanized.

As a direct result of research investigations definitely proving that iron salts from the pickle, iron chloride from the muriatic acid dip flux, and iron from corrosion between pickling and galvanizing, all form dross, the development of a whole new technique gradually has been accepted, namely, that of the liquid flux practice instead of the muriatic acid dip flux. The new method involves washing after pickling, and then a dip in a liquid solution of zinc-ammonium chloride of high enough concentration to completely cover the surface with a transparent film. This coating protects the surface from all oxidation from the exposure in the air between pickling and galvanizing. This new liquid flux technique greatly reduces dross production in all fields of galvanizing where it is used.

Great advancement has been made in reducing dross production in pipe galvanizing which has been due to too long submersion time. Batch pipe galvanizing has been changed to single or double line pipe galvanizing. Another cause of long submersion time has been due to burning on the old steel hot plate drier in preparing malleable iron fittings for the galvanizing bath. This caused excessive corrosion which made it necessary to carry a higher operating temperature of the molten zinc and to use a longer submersion time to overcome the corrosion and obtain a perfect coating. Use of a hot air drier has not only eliminated corrosion on the drier, but also has greatly increased production because of the shorter submersion time, since the corrosion has been eliminated. This new technique of hot air drying therefore has helped to reduce dross production.

Enormous strides have been made in the past 20 years in galvanizing furnace design. New fuels, gas and oil, which permit of automatic temperature control, have greatly reduced dross production. Today furnace design begins with the proper balance of heat input between metal capacity of the pot and side heating area and, finally, thicker sides.

Combustion chambers have been enlarged to reduce the heat intensity. More time is allowed for the fuel to burn properly, and for the heat to be taken up by the pot and furnace, rather than to be carried swiftly up and out of the stack. Proper location of the flues and a more scientific heat application in the area where the production passes through the bath also have tended to create less dross.

From a paper presented at International Conference on Hot Dip Galvanizing, Copenhagen, Denmark, July 17-21 and preprinted by the Hot Dip Galvanizers Association, Lincoln House, Turl St., Oxford, England.

Hard Alloys Succumb to Research

Almost as hard as diamonds are the alloys which must withstand temperatures around 1800° F. These new materials and those used in rockets where temperatures range even higher have been posing quite a problem for plants which are engaged in machining them.

As the factors which impart the desired qualities of high temperature strength and corrosion resistance also increase the cutting strength of the alloys, it has been found that the present methods of machining metal have been ineffective for jet engine alloys; they are often harder than the tools available to cut them. The United States Air Force Air Materiel Command is releasing a report of a $100,000 research program on handling of these superhard metals. The result of 2½ years of intensive study, it contains advanced principles of machining high temperature alloys.

The research program tackled the problem through the microstructure of alloys. Data on the ways of handling the new metals are included. Specific phases of the research were constructed by engineers at Ford Motor Co., Dearboorn, Mich.; Metcut Research Association, Cincinnati, O.; Curtiss-Wright Corp., Woodridge, N. J.; and Massachusetts Institute of Technology, Cambridge.

High Precision Drill Chuck Offered

Jaw tolerance on the recently introduced Hjort drill chuck is 1/12,000-inch. Rockwell hardness is 64 and all parts of the chuck are said to be interchangeable. Made by Leo Hjort Co., Copenhagen, Denmark, and available in this country from Hauser Machine Tool Corp., Manhasset, N. Y., the chuck has double bearing contacts for all moving parts to secure the true running of the chuck and accurate centering of the drill.

Special jaw guide made of tough material makes it possible to clamp near the top of the drill. It is said that this chuck will withstand any strain that the drill can stand.

You might ponder a bit about what you see in Soda Fountains

UNLIKE the bemused young man who is ruining his shoeshine, above, we ask you to overlook the social aspects of soda fountains, sandwich shops or lunch counters, etc., and give heed instead to their economics.

The economic angles, for instance, that cause these popular eating places of the short-order, quick-lunch variety to go in so heavily for stainless steel equipment. Notice it for yourself. Practically *everything* behind their counters is made of clean, bright, efficient-looking stainless steel—sometimes even the walls and ceiling.

Why? Because nothing else fills the bill as well and keeps operating costs as low. No other commercially available metal packs the same combination of great strength and resistance to corrosion, heat and wear.

If these properties are important to soda fountains, they are doubly vital to essential industries and to the national welfare in times of stress.

Every user of stainless steel today should aim at using it to the best advantage. ● We're ready to help you, and in addition we're continuing to spend millions of dollars to increase the supply of Allegheny Metal and other alloy products.

* * * * *

Complete technical and fabricating data—engineering help, too—are yours for the asking from Allegheny Ludlum Steel Corporation, Pittsburgh, Pa. . . . the nation's leading producer of stainless steel in all forms. Branch Offices are located in principal cities, coast to coast, and Warehouse Stocks of Allegheny Stainless Steel are carried by all Joseph T. Ryerson & Son, Inc. plants.

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You can make it **BETTER** with

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AL
TIME-TESTED STAINLESS STEEL

Alloy Steel Valve Casting Unimpaired After 6 Years' Service

TREND toward increasing efficiencies of steam-power generating units has created the problem of selecting materials which will meet adequately the service requirements imposed by steam at high pressure and at high temperatures. Low-alloy steels have been used for temperatures up to above 1000° F, but there is a limit of temperature, generally considered to be in the neighborhood of 1050° F, beyond which the properties of low-alloy steels no longer are adequate.

Long service at 900° F and above has revealed that some steels which have been considered suitable for the service conditions deteriorate much faster than anticipated, particularly in the vicinity of welds. Certainly, the type of deterioration that has caused greatest concern over the past several years has been graphitization.

One of the materials used extensively in cast valves and fittings for steam at temperatures up to 950° F is a nickel-chromium-molybdenum steel, conforming to the requirements of grade WC-4 of ASTM, specification A-217, (nickel 0.99, chrome 0.61, molybdenum 0.37, carbon 0.21, manganese 0.62, silicon 0.39, sulphur 0.017 and phosphorus 0.030 per cent). Extensive tests had indicated that this steel was resistant to graphitization under conditions imposed in the laboratory. It was recognized, however, that no matter how favorable the laboratory data, the most convincing evidence would result from tests of material that had been in active service for a long period. Through the cooperation of the Detroit Edison Co., a cast-steel valve of approximately WC-4 composition that had been in service for slightly over six years was made available for study. The valve was performing satisfactorily and probably would have continued in service for an indefinite period had it not been removed for this investigation.

Operating Conditions—The part selected was a 4-inch, 900-pound slide valve which had been in continuous operation at a nominal temperature of 900° F for 53,810 hours, and at an average pressure of 841 psi. From results of frequent pyrometer readings, it is estimated that the valve operated 90 per cent of the time at temperatures within a range of 885 to 900° F. Maximum temperature reported was 935° F, and the minimum temperature was 855° F.

Stellite-faced seat rings had been welded into the body by the valve manufacturer. The pipe ends were welded to the body after the valve was received. The welding procedure for the pipe ends consisted of preheating the casting to 400-600° F, welding by the metal-arc process, and subsequently stress relief-annealing at 1200° F, the time at temperature being 2 hours per inch in section.

At the time the casting was made, the present specifications for grade WC-4 cast steel were not in effect but, in general, the casting meets current requirements except for slightly lower molybdenum than now specified.

The melt was produced in the acid-electric furnace and deoxidized in the conventional manner before pouring. Additions of 0.09 per cent calcium-manganese-silicon alloy and 0.12 per cent aluminum were made to the ladle.

Mechanical Properties—The castings had been subjected to the following heat-treatment cycle:

Heated to 1800° F—held 5 hours—cooled in furnace
Preheated to 1500° F—held 5 hours—cooled in air
Preheated to 1200° F—held 5 hours—cooled in air

Results of tensile and impact tests of coupons heat-treated with the casting are compared in the accompanying table with results obtained on specimens cut from the valve after it had been withdrawn from service. Three of the specimens from the valve were taken from random areas not affected by welding, and two specimens were taken that included the heat-affected zone adjacent to a weld.

It will be noted that strength values of specimens cut from the casting are in close agreement with the strength values of the test coupon and, although the ductility of the casting specimens are somewhat lower, this is to be expected. The impact properties of the casting specimens are slightly lower, with one exception, than the value for the test coupon, but there is no indication of brittleness. The one high value for the casting is probably due to a preferred microstructure resulting from rapid cooling from high temperature during welding. As impact values in the heat-affected zone usually fall within a wider scatter band than test values in unwelded areas, these results follow the general pattern.

RESULT OF TENSILE AND IMPACT TESTS

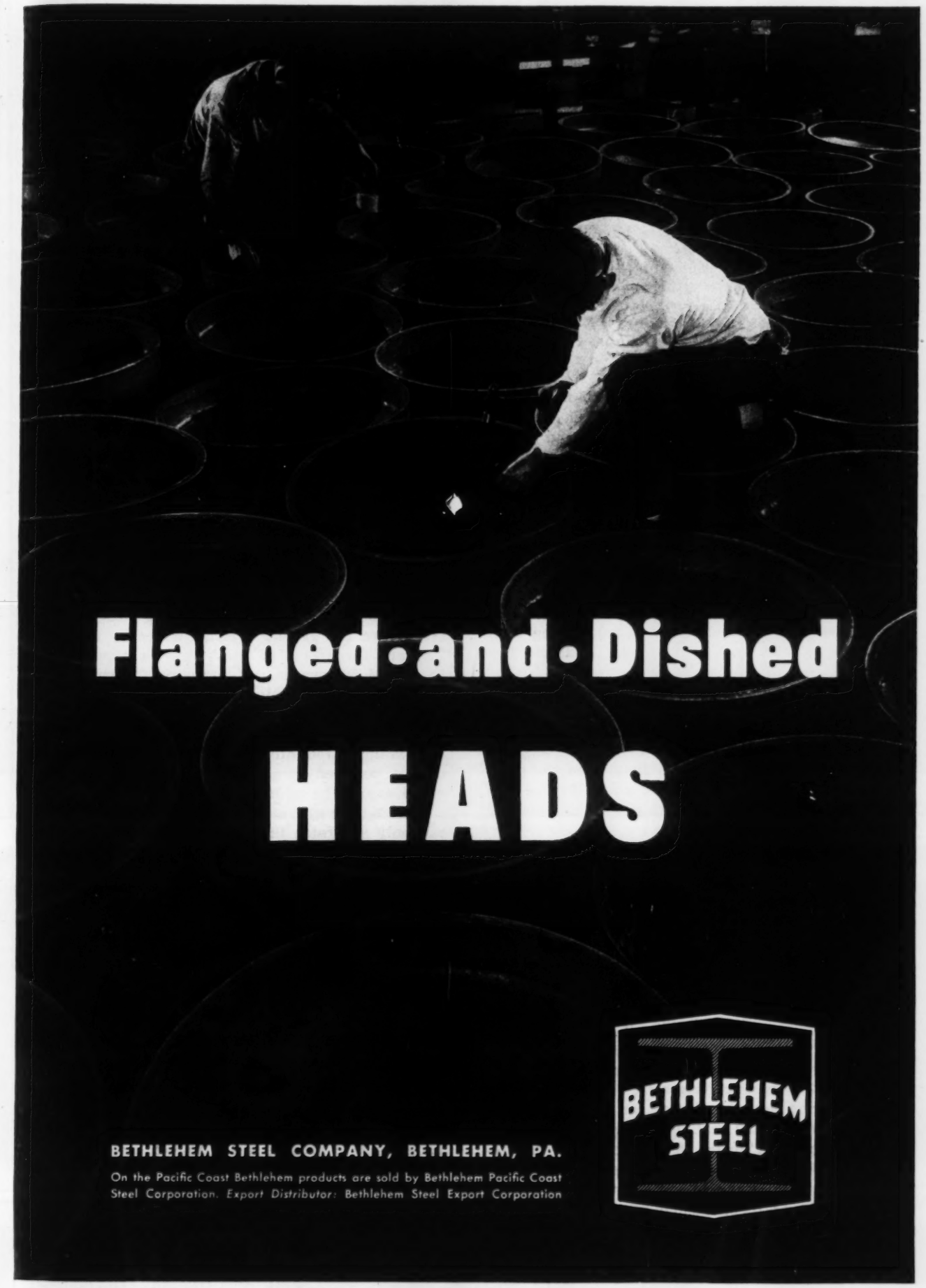
Test no.	Location	Yield strength, psi	Tensile strength, psi	Elong. in 2 in., per cent	Red. of area, per cent	Charpy V impact, ft-lb	Bhn
1	Test coupon	54000	84700	26.2	52.2	32	170
2	Casting	57400	82200	20.5	30.3	22	166
3	Casting	54100	82100	22.0	45.5	21	163
4	Casting	53400	83400	16.5	26.5	24	166
5	Heat-affected zone	.....	.....	...	...	24	207/240
6	Heat-affected zone	.....	.....	...	...	43	200/255
	Specifications	40000	70000	20.0	35.0	..	.....

These values reported by the valve manufacturer.

Although mechanical properties of sections from the casting and metallographic examinations indicated there had been little change in either properties or structure during the service period, there were no control specimens for comparison. An attempt was made to approximate the original microstructure by subjecting a specimen from the casting to the same heat-treating cycle originally employed. The only difference appeared to be a more uniform distribution of carbides in the re-treated sample, but the faster cooling rate of the laboratory-treated sample could account for this difference. No difference could be detected in the form of the carbides.

The results of the study indicate no loss of strength, no embrittlement, and no occurrence of graphite in the welded valve casting of nickel-chromium-molybdenum steel, of approximately WC-4 grade, after exposure to steam at 900° F for a period of six years.

Data presented in a paper before annual meeting of the American Society of Mechanical Engineers in New York, Nov. 26-Dec. 1. Authors are T. N. Armstrong, Development and Research Division, and R. J. Greene, research laboratory, International Nickel Co. Inc.

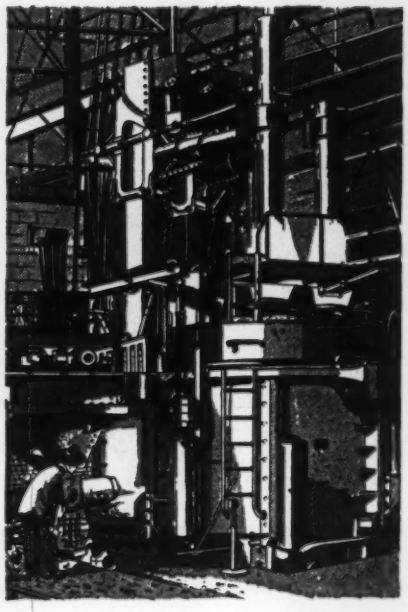


BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Interest in Continuous Steel Casting Gains Momentum

A 100 square inch mold is being built for pouring slabs suitable for conversion on continuous strip mill. Two continuous casting machines have been ordered by Allegheny Ludlum; six other steel companies have proposals for similar machines under consideration. Steel is being made in 7-ton electric arc furnace located on pouring floor of B & W installation at Beaver Falls, Pa.



CONTINUOUS casting was brought up-to-date at the eighth annual conference of the Electric Furnace Committee, American Institute of Mining and Metallurgical Engineers, Hotel William Penn, Pittsburgh, Dec. 7-9. Highlights of the technical session devoted to this subject were that a mold now is being constructed for casting a slab of 100 square inches cross section for rolling to a width of 26 inches on a continuous strip mill; since continuous casting of steel still is in the experimental stage it is unwise to build a plant until it can be determined how large a section can be cast advantageously; and, two continuous machines of the Rossi type for casting steel have been ordered by the Allegheny Ludlum Steel Co.

Isaac Harter Jr., engineer in charge of continuous casting, Babcock & Wilcox Tube Co., Beaver Falls, Pa., in describing the Williams method of continuous steel casting as developed jointly by his company and Republic Steel Corp., announced that when the process is ready for commercial production licenses will be granted to those who desire to employ this method of getting steel into the mold.

He emphasized the need for a decentralization in the steel industry. Employment of continuous casting process appears favorable in view of certain factors in the current trend, such as the spreading out of various industries, the continual increase in the cost of raw materials and the growing need for steelmakers to obtain iron ore outside the border of this country.

Initial Cost Lower—The electric furnace is ideal for steelmaking, he stated, for it makes possible a saving in capital investment. The initial cost of an open-hearth furnace is twice that of an electric arc furnace for the same melting rate, he explained.

In comparing cropping losses Mr. Harter pointed out that in stationary casting of ingots the top and bottom cropping is about 18 per cent and this remains constant regardless of the size of the heat. In continuous casting of steel, cross section of the piece is smaller than an ingot, pounds of croppage less and the total loss decreases with the size of the heat.

At the Beaver Falls pilot plant metal for the continuous casting machine is furnished either by a 7-ton arc furnace operated on the pouring floor about 75 feet above the ground or from a nearby melt shop. The arc furnace is of the screw-tilt type and can be moved backwards and forwards. During the refining period the refining slag is replaced by a neutral slag.

Metal Is Lip-Poured—Hot metal from the arc furnace is lip poured into a tundish. A bottom pour ladle cannot be used in continuous casting because the metal cannot be poured at a uniform rate. And so a tundish built with an inverted weir is employed which not only separates the slag from the metal but also affords a uniform pour. In order to supply a constant stream of metal to the tundish the arc furnace tilting action is controlled by an x-ray beam directed across the level of the molten metal in the mold and tied in with a solenoid. A television camera mounted some distance above the mold and sighted on its interior affords a constant check on the level of the metal in the mold.

The mold is an open end water-cooled brass tube, 30 inches in cross-section; its contour delivers an oval 9 x 4½ inches. Rectangular and other shapes can be cast but practice at the Beaver Falls plant has been standardized on the oval shape because of the rapid cooling which this particular section affords. Mr. Harter announced, however, that a mold now is being built to produce a 3 x 15-inch slab for conversion on a continuous mill to sheets 26 inches wide. With the new mold the pouring rate will be stepped up to 30 to 40 tons an hour.

Mold Bottom Moveable—Before the casting operation begins a dummy bar is elevated into the mold by a pair of motor-driven controlling rolls. These merely

Doehler-Jarvis First ...AS USUAL

One-Piece Die Cast Garnish Mouldings for the 1951 Kaiser

Cast Moulding Gives Best Fit

A notable styling improvement on the 1951 Kaiser is the relative absence of exposed mounting screws on the window garnish moldings.

This is mainly attributable to the fact that the new moldings are manufactured from a one-piece die-cast rather than a stamping.

The greater rigidity of the aluminum die-cast part, supplied to K-F by Doehler-Jarvis, makes fewer mounting screws necessary.

Only two screws—one at each end—are necessary in the long base of the molding, while the stamping required screws along the full perimeter.

Rigidity of the new molding makes it possible to place the top mounting screws through the unexposed upper edge of the door. The front garnish molding is mounted with four screws, the rear with five.

Other advantages of the die-cast are these:

1—The one-piece part provides a better fit. There no fitting problems resulting from variances in welds or metal finishing as encountered in the welded stamping.

2—As compared with stamping, die-casting of the new molding, due to its design, results in a slightly lower per part cost.

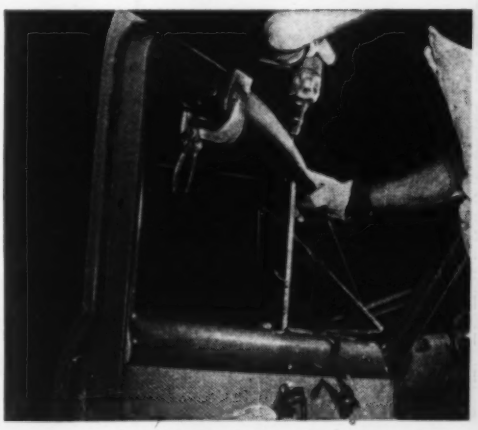
3—The better fit of the die-cast part and the reduction in the number of mounting screws has reduced installation time, with a resultant saving in assembly cost.

4—The better fit and the fact that there are fewer screws to be mounted reduces the possibility of damage to the molding during installation.

Reprinted from Kaiser-Frazer News

Die casting may be the answer to your problem, just as it was for the Kaiser-Frazer Corporation in the production of garnish window mouldings for the 1951 Kaiser. The same Doehler-Jarvis research, engineering, and mass-production facilities which made this development possible are available to you.

DIE CASTING IS SO RIGID that only two screws are needed on the long base.



STYLING IMPROVEMENT—rigidity also permits placement of top screws through unexposed edge.

ONE-PIECE DIE CASTING gives better fit—reduces assembly time.

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The World's Largest Producer and Finisher of Die Castings

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NEW OFFICERS FOR 1951

Electric Furnace Steel Executive Committee; Chairman

T. J. McLoughlin, assistant to vice president in charge of operations, Carnegie-Illinois Steel Corp., Pittsburgh

Committee for Ninth Conference; Chairman

R. H. Frank, chief metallurgist, Bonney-Floyd Co., Columbus, O.; and vice chairman, W. M. Farnsworth, assistant district manager, Republic Steel Corp., Massillon, O.

serve as pinch rolls. A head is screwed to the top of the dummy bar and forms the bottom of the mold. When metal in the water-cooled mold is about 8 inches above the dummy bar head the solidified bar is lowered out of the mold and passes through an insulated jacket where the casting is brought to a state of equilibrium throughout its thickness. Upon leaving the jacket the oval is received by a set of pinch rolls. The casting then passes cutoff station where it is cut to predetermined lengths by a cutoff torch without interfering with its movement. The severed piece is received by a trough which when lowered into a horizontal position serves as a runout table to move the semifinished section to a cooling bed on the outside of the building.

Metal poured into the mold must be slag-free for even a small piece of slag between the mold and the steel acts like a wedge and produces a cold shut in the casting. Reoxidation of the steel in the mold is another important phase of the casting operation and to avoid this condition during the pouring operation a pool of an inert gas, such as argon, is maintained in the top of the mold above the liquid steel. Other important factors associated with continuous casting of steel mentioned by the speaker include control of the metal composition, pouring temperature, slag separation, proper mold design, automatic pouring control, cross section of the casting and auxiliary cooling below the mold.

Mr. Harter pointed out that if studies concerning the feasibility of a steel industry in the New England states show that there is an adequate supply of electric furnace scrap in that locality, then at some future date the continuous casting process may receive support there.

Discussion of Harter Paper—Rate of casting is 4 linear feet per minute at the Beaver Falls plant, but this has been exceeded. Wear on the mold is negligible. Yield is an important factor in the process. Continuous casting of steel is not intended to compete with a fully integrated steel plant; its value lies with the small nonintegrated producer—one located away from water transportation, as one Canadian steelmaker stated. To eliminate any variables Mr. Harter stated his plant was concentrating on the casting of 0.10 to 0.20 and 0.30 to 0.60 carbon steel; he mentioned that some stainless grades also have been cast.

E. C. Smith, chief metallurgist, Republic Steel Corp., Cleveland, called attention to the continuous casting of 0.75-0.85 carbon and 0.70-0.90 manganese steel which later was converted into various wire mill products. He warned, however, that continuous casting will not clear up bad steelmaking.

Consumption of argon gas used in the top of the mold is exceedingly low. Reason for the use of this type gas is that it stays down in the mold. Most any type of inert gas can be employed, however. Pouring temperature of 0.10 to 0.20 carbon steel from the tundish into the mold ranges between 2900 and 2950° F (optical reading). As for the future Mr. Harter expressed the opinion that many things are being considered to get plenty of steel into molds by continuous casting.

End Product—Steel from the continuous casting plant at Beaver Falls has been subjected to piercing. Out of 173 operations only one section was rejected for mill seams on the exterior. A carload of continuous cast ovals have gone into forgings, another carload into structural shapes and a few tons into welded and seamless tubes.

Irving Rossi, president, Rossi Engineering Co., New York, in discussing continuous casting announced that his company has built 15 to 20 commercial machines for the continuous casting of nonferrous metals, these accounting for the casting of 3 million tons of metal. He mentioned that steel has been cast continuously for over six months at the Watervliet plant of the Allegheny Ludlum Steel Co. and that the company recently placed an order for two Rossi casting machines, one for installation at Watervliet, N. Y., plant, and the other for Brackenridge, Pa., works. In developing his machine for casting steel the problem was approached from knowledge gained in casting nonferrous metal rather than from the steel angle solely.

There is no difference in the continuous casting of steel and nonferrous metals insofar as the removal of heat is concerned, stated the speaker. It makes little difference what the heat is if the bar comes out of the mold completely solidified. With the Rossi method of cooling the nonferrous section the problems presented by different alloys cast can be adjusted. He mentioned that his machine is casting nonferrous bars, 2½ x 25 inches, at the rate of 15 tons an hour.

Setup Most Important—The mechanical setup before the casting machine is considered by Mr. Rossi to be of greater importance than the casting itself; the shape to which metal is cast makes no difference. His method employs a holding furnace into which metal is fed intermittently and while this feeding is in progress the metal is bottom poured into the mold. The machine has operated on nonferrous metals for a period of two months without interruption.

Mr. Rossi states his philosophy is to take out the maximum amount of heat as quickly as possible. He employs a copper mold 18 to 24 inches long. When molten metal is poured into the mold a shell is instantly formed within 2 or 3 inches from the top with an air space between metal and mold. Water is brought up into this space between casting and mold without any sign of steam forming. The speaker declared that water even has been run up over the metal. He explained the water film is thin and that

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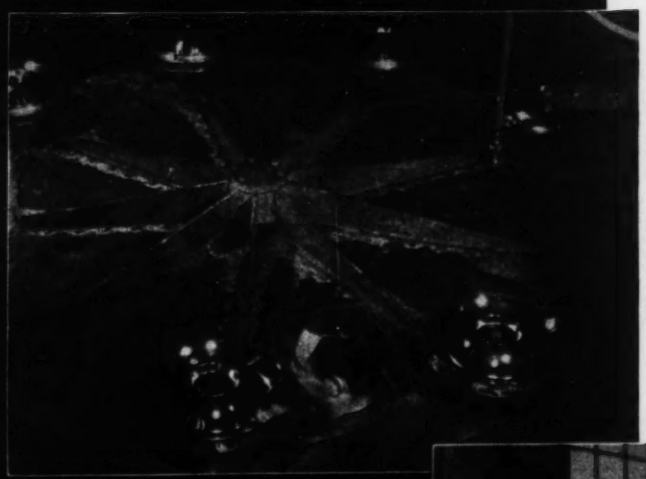

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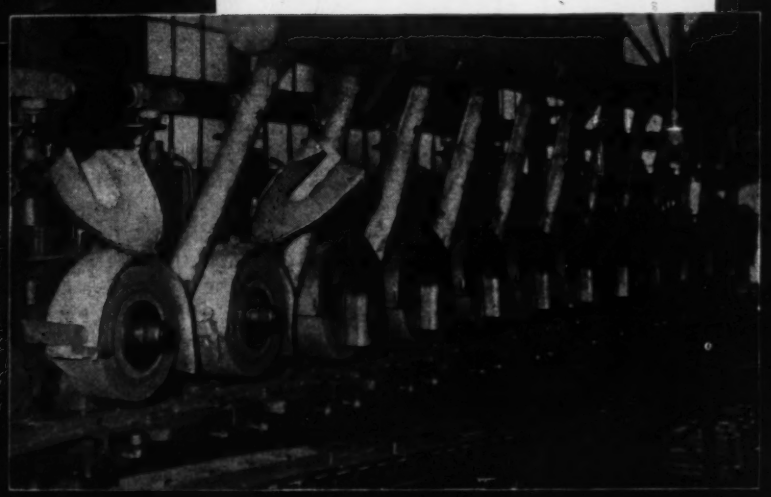


NORTON
ABRASIVES

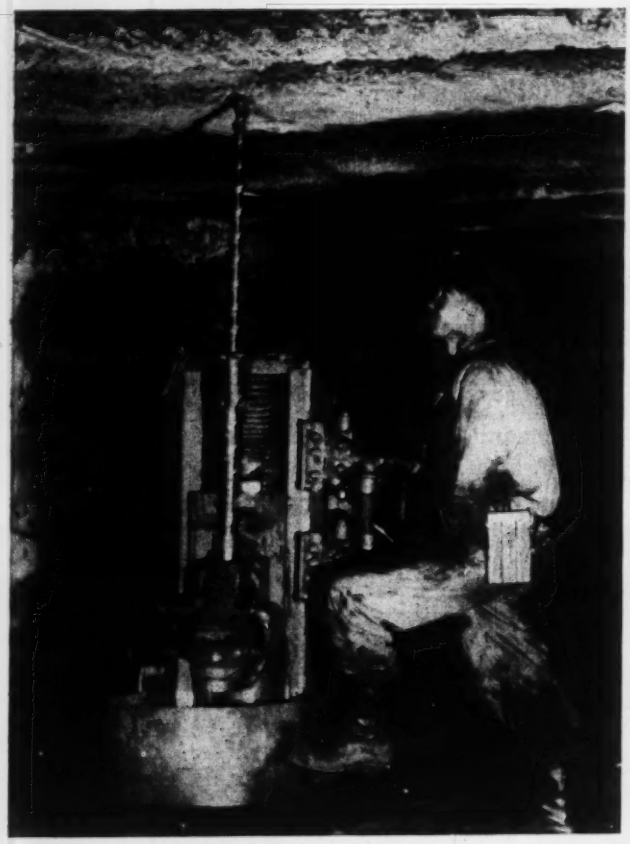
the water loses its temperature to the copper mold before it gets up to any great height.

Brassmaker Effects Saving—In comparing the cost of continuous casting of nonferrous metals with conventional methods the speaker brought out that one large brassmaker is experiencing a saving of $6 to $10 a ton by casting continuously on a recent installation costing $10 million.

Allegheny Ludlum studied the benefits to be derived from continuous casting of steel. Overlooking the capital investment, a saving of $8 to $12 a ton is had in casting carbon steel, and from $60 to $100 a ton in casting stainless grades, the speaker declared. In addition higher yields are obtained.

Mr. Rossi mentioned that he has made six proposals for continuous casting machines for steel companies which cannot afford blooming mills. He directed attention to a present-day trend to make small plants more economical and in conclusion stated that continuous casting will get its start in small companies.

Nonstalling Roof Drill



You can drill at speeds up to 10 feet per minute with this automatic feed control-equipped roof drill and wrench, developed to operate with electric power from the main power drag cable by Baker-Raulang Co., Cleveland. Operated hydraulically, the Baker-Fletcher unit is said to require no particular operator skill, being provided with automatic feed control. As drilling, bolt insertion and wrenching are through the same center, all work remains in line. Machines are made in 50 and 59-inch heights, with 48 and 66-inch drill travel, respectively. Hydraulic tilt of 45 degrees to either side facilitates angle boring

Nodular Iron for Mechanical Parts

The time is not far off when such items as high-pressure compressor cylinders, supercharged diesel engine crankshafts, pistons and other parts subject to severe mechanical service will be produced from nodular iron. This is the opinion of T. E. Eagan, chief metallurgist of Cooper-Bessemer Corp., Mt. Vernon, O. Many highly-stressed engine and compressor parts, Mr. Eagan said, can now be made successfully from nodular iron. With the high tensile properties as well as the ductility being developed in nodular iron, it is apparent that this new material will in the near future gain widespread use, not only in the engine and compressor building industry, but on other types of petroleum processing equipment where high pressures are encountered.

Since Cooper-Bessemer was the first company licensed to produce nodular iron for use in engine and compressors, wide-spread interest has been focused on that company's development work. While there is still considerable development work to be done in perfecting melting techniques and casting procedures for large-scale production, Eagan maintains that basic data already gathered confirm initial promise that nodular iron is an excellent material for many intricately-designed castings.

Speaking before regional meetings of the American Foundrymen's Society in Los Angeles, San Francisco, Portland and Seattle, Mr. Eagan disclosed that nodular iron is now being produced possessing tensile strengths exceeding 90,000 psi. Ductility is averaging ten times that possible with cast iron. Fatigue tests conducted on high pressure cylinders are demonstrating, he said, that nodular iron equals and in many cases exceeds the fatigue endurance that can normally be carried with mild cast steel.

Equipment Gaged at High Speed

Automatic gaging and segregating for dimensional and load checks of ceramic protector blocks having carbon inserts, used in telephone equipment, are performed at high speed by a machine developed by Sheffield Corp., Dayton, O. Machine incorporates provision for rapid changeover and setup on several different blocks; it is capable of checking up to 3600 parts per hour.

Protector blocks are manually loaded into a magazine-type feed, a blast of air cleaning them as they move down the chute. The magazine stops automatically when fewer than the required number of parts are loaded, this preventing the machine from indexing while a part is entering the carrier.

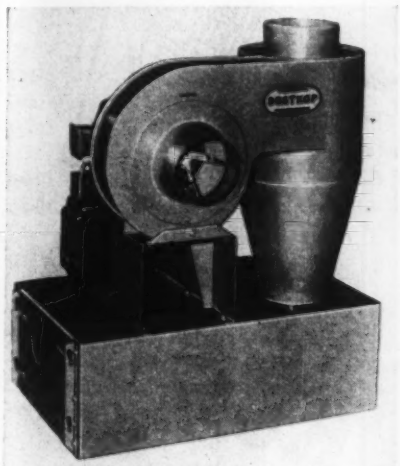
A light panel gives visual indication of results of each gaging operation, enabling the operator to view the quality trend of the parts. Sheffield Airlectric and Electrichek heads are used as the gaging mediums. Rejects are segregated into maximum and minimum chutes, while parts passing all gaging stations are indexed to and unloaded at a chute which carries them on endless belt conveyor outside the machine.

New Products and Equipment

Dust Collector Exhausts Fumes

Toxic fumes or vapors from which dust has been removed are exhausted outside when the model 8N50 Dustkop dust collector, built by Aget-Detroit Co., Ann Arbor, Mich., is used. Rated at 885 cfm with 3-inch static suction, the 20 x 30-inch machine is a standard unit available from stock. A self-clearing paddle wheel fan driven by a ¾-hp continuous duty motor clears lint and string from buffing, chips, shavings and saw dust as well as most other kinds of dust.

Dust laden air enters the unit at the 5-inch diameter inlet, the foreign



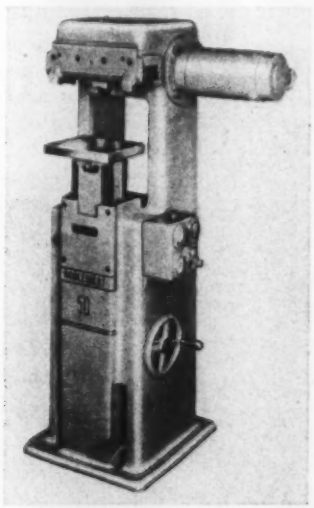
material being taken out in the cyclone separator and deposited in the dust storage compartment measuring 9 x 20 x 28 inches and comprising the base of the unit. Cleaned air is exhausted to the outdoors through an outlet at the top of the cyclone.

Check No. 1 on Reply Card for more Details

General Purpose Marking Unit

Noble & Westbrook Mfg. Co., East Hartford, Conn., is manufacturing the Noblewest 50 series general purpose marking machines for trade marking, part numbering, codifying and serial numbering on various materials. The all-pneumatic, semipneumatic and hand-operated models use the roll-marking process which avoids shock to either marking die or piece being marked. Process will mark close-tolerance parts without straining or distorting them.

Model 50P1, all-pneumatic unit, will mark up to 1200 pieces per hour. Both table and die slide are independently powered. Machine is connected directly to shop air lines and has only one air control adjustment. Cylinder sequencing is automatic, regardless of table pressure setting. Model 50P semipneumatic has an air operated table, but die slide is drawn across the work by manual lever. Pneumatic table operation provides automatic compensation of work pressure and permits even marking of irregular and contoured pieces. Pro-

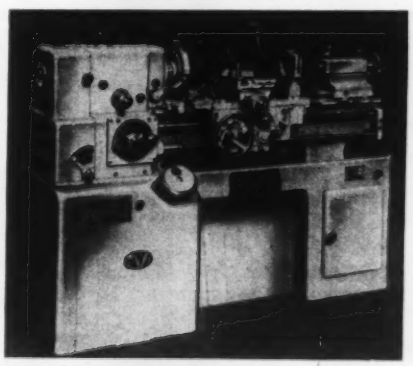


duction is 400 to 650 pieces per hour. Model 50 is entirely manually operated, table being raised by foot pedal and marking die carried across the work by hand lever. It is capable of marking 300 to 500 pieces per hour.

Check No. 2 on Reply Card for more Details

Twelve Speed Toolroom Lathe

DCMT Sales Corp., 164 Duane St., New York 13, N. Y., is offering No. 1A a 12-spindle speed precision toolroom lathe with semisteel cross section and flame hardened and precision



ground ways. Headstock spindle is carried by two pairs of angular contact ball bearings, each separately housed in an oil bath. Spindle register for chucks is of conical form, attachments being secured by three quick-release cams.

Spindle speeds range from 25 to 1645 rpm. Totally enclosed auto-lock feed gear box is oil immersed. Threads and feeds are given on a large easily read dial and changes effected by a knob. Saddle ways are automatically pressure lubricated, as is the cross slide screw. Taper turning attachment has readings in inches per foot and degrees. Swing-over bed is 12½ inches and over slide, 6¾ inches. Distance between centers is 30 inches.

Check No. 3 on Reply Card for more Details

Control for Flash Welder

Duplication of flash welder setup is made easier by a fully hydraulic control with adjustments calibrated, the Hydra-Flash, developed by Kingsley

A. Doutt, 18465 Schaefer Highway, Detroit 35, Mich. It enables the flash welder to which it is applied to weld any material that it is practical to join in any cross sectional area within the physical and electrical capacities of the welder.

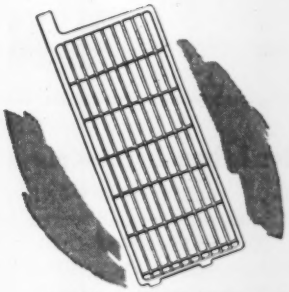
Range of cross sectional areas that any flash welder can accommodate is extended and may be as great as 40 to 1. With the control, only one limit switch is necessary to operate any standard flash welder.

Check No. 4 on Reply Card for more Details

Spot Welds Various Metals

Various thicknesses of aluminum, magnesium, stainless steel, Inconel, Monel, brass, mild steel and other alloys may be spot welded by a resistance welder manufactured by Sciaky Bros. Inc., 4915 W. 67th St., Chicago 38, Ill. The model PMCO2ST three-phase Modu-Wave welder requires no changes when switching from one thickness of one material to another. The three-phase type of operation makes possible its use where there are power limitations.

The press type machine is rated at



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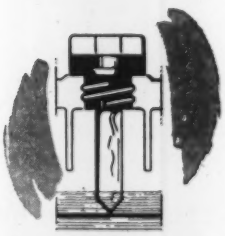

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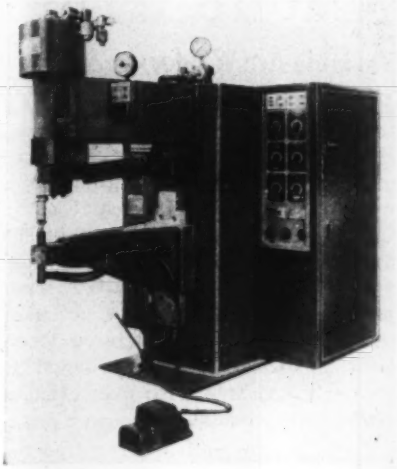
100 kva at 50 per cent duty cycle and operates on 220 and 440 v three-phase, 60 cycle current. Throat depth is 36 inches; other depths are

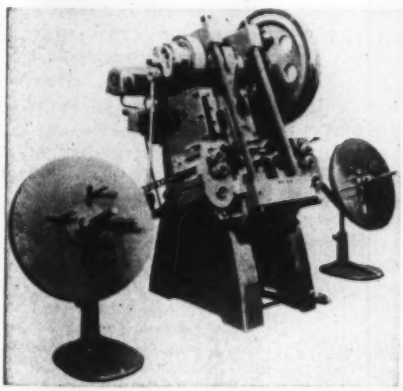


available. Welding range on low carbon steel is from 0.022 to 0.156-inch (two thicknesses) and on aluminum and magnesium alloys, the range is from 0.025 to 0.081-inch.

Check No. 5 on Reply Card for more Details

High Speed Precision Presses

Choice of either one of two adjustable stroke ranges, with 12 different strokes in each range, is given those buying Hipromat presses, made by Maust Machinery Corp., 85 212th street, Queens Village 8, N. Y. Press-



es feature: Hollow hardened and ground feed roll; three spring-loaded brakes for driveshaft, lower feed roll, and upper feed roll; constant but adjustable roll opening to prevent damage to roll surfaces; automatic roll release for piloting; and hand lift for upper feed rolls. Auxiliary equipment includes five-roll stock straightener, pay-off stock reels, scrap rewinding reels and shear-type scrap cutter.

Three basic types of 30-ton capacity presses are available; open back inclinable, open back endwheel with fixed bed, and endwheel with adjustable bed and horn. Two stroke ranges are from 3/32 to 1 3/4 inches and from 5/16 to 3 5/32 inches. All are available with variable speed drive for 66 to 220 strokes per minute. They are equipped with flywheel drive or are single geared.

Check No. 6 on Reply Card for more Details

Packaged Monogas Generator

Monogas, a nondecarburizing neutral atmosphere consisting essentially of nitrogen, with low hydrogen and carbon content and with carbon dioxide, oxygen and water vapor removed, is supplied by a generator manufactured by Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. Unit includes generator and

scrubber as one unit, the result being that the waste heat of combustion in the Exogas generator is utilized in reboiling the CO_2 scrubbing chemical.

Packaged unit also reduces floor space requirements to a minimum and simplifies much of the usual on-the-job pipe fitting. Units are available in sizes ranging from 500 through 15,000 cubic feet per hour.

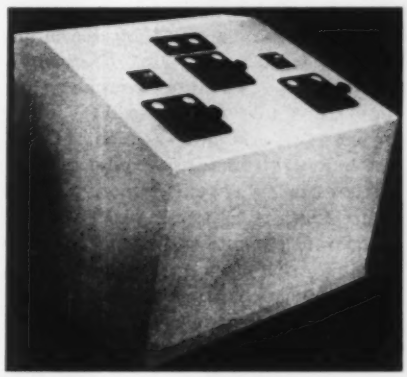
Check No. 7 on Reply Card for more Details

Controlled Electronically

Freedom from control centralization, simplified and smaller control panels, elimination of transmission lags and greater accuracy and speed of response are advantages of the Telemaster electronically operated master control system for combustion and process control applications, a development of Republic Flow Meters Co., 2240 Diversey Parkway, Chicago 47, Ill.

The system combines the null-balance principle of detection and the electronic transmission of control information to form a highly responsive control system that is rapid in completing adjustments regardless of distances involved.

Manual operations at the central control panel are simplified. Change

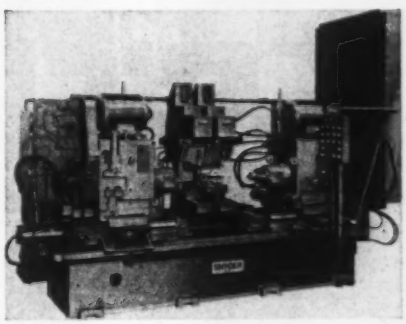


from automatic to manual operation is accomplished by throwing the transfer switch. No control panel piping is necessary, multi-wire cables being the only connection between the Telemaster and the individual measuring and control elements.

Check No. 8 on Reply Card for more Details

Machine Balances Rapidly

Fully automatic, a special machine for balancing milling connecting rods, made by Snyder Tool & Engineering Co., 3400 E. Lafayette, Detroit, Mich., operates at a production rate of 144 pieces per hour at 80 per cent efficiency. Rods are balanced to



within less than 2 grams variation in overall weight. Operation is entirely automatic after locating the workpiece and pressing the cycle button; unskilled labor may be used.

When the operator loads the workpiece, it is automatically weighed and the scales register the amount each end is out of balance and transmits to the units on both sides, signals which set up these units for correct stock removal. Balancing is accomplished in one pass milling and conforms to tolerances of 1/16-ounce on either end and in overall weight. Machine is equipped with a safety

switch which operates if stock removal necessary for balance goes beyond maximum milling dimension allowable.

Check No. 9 on Reply Card for more Details

Multipoint Descaling Hammer

Descaling is speeded by loosening scale over a larger surface with a multi-point descaling hammer offered by Jack Churchward Welding Accessories, North Haven, Conn. Its hollow-ground head provides effective use as a weldscraper, yet will remove spatter. Removal of slag from weld pockets and corners is also possible with its slagging pick.

Use of the hammer is expected to realize time savings. Well-balanced handle reduces worker fatigue. As a scraping tool it will remove slag from edges of welds.

Check No. 10 on Reply Card for more Details

Center Control Fork Truck

Shockless automotive type of steering wheel placed in a horizontal position at the proper height for tireless operation is a feature of the type FC center-control fork trucks offered by Baker Industrial Truck Division, Baker-Raulang Co., 1250 W. 80th St., Cleveland 2, O. When driving the truck, the operator stands on the right side of the vehicle; due to the low panel, he has an unobstructed

view of the front end of the fork when engaging a load. One pedal operated by the left foot in the normal driving position controls power and braking.

Levers for controlling hoist, tilt, direction of travel and acceleration are located by the operator's right hand and are labeled. The three available models are capable of carrying 3000, 4000 and 6000-pound loads with 48-inch long loads. Turning radii are 74, 74 and 81 inches, respectively.

Check No. 11 on Reply Card for more Details

Variable Arc Welder

Any type of arc and any arc intensity may be quickly and simply set by the dual continuous control on the shield-arc SAE engine driven welder offered by Lincoln Electric Co., Cleveland 1, O. Offered in 300 and 400 amp models, the welder has an open circuit voltage that is adjusted in a continuous sequence of fine steps by a dial-operated shunt field rheostat. Welding current is similarly adjusted with a continuous series field control.

Less fuel and oil are required because of its idling device. The engine idles at low speed when not welding, but upon striking an arc it speeds up to the properly governed rate. Momentary interruptions of the arc or normal time required for changing electrodes do not alter engine speed. Offered with two and four rubber tired wheels, the welder is available with a self-starter and

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AVONDALE

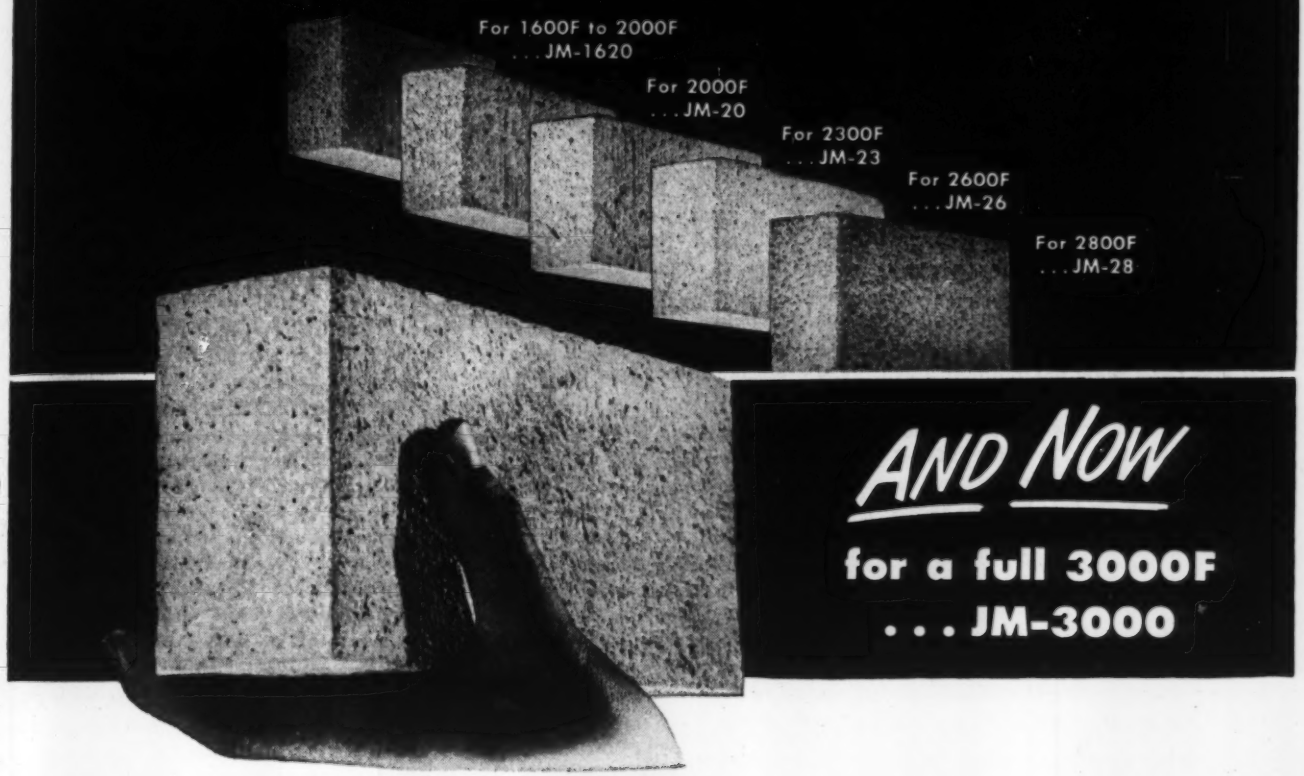
More and more in the marine industry, especially at AVONDALE MARINE WAYS . . . *steel* is used! In building and repairing ships of all types, in the fabrication of equipment for offshore oil drilling, in all the work AVONDALE does—*steel* is the material most used!

AVONDALE MARINE WAYS, INC.

RIVER FRONT, NEW ORLEANS DISTRICT
MAILING ADDRESS: WESTWEGO, LOUISIANA

QUICK REPAIR PLANT . . . HARVEY, LA.
MAIN PLANT: AVONDALE, LA.

MEET the family of Johns-Manville Insulating Fire Brick . .



AND NOW for a full 3000F . . . JM-3000

HERE IS AN OUTSTANDING FAMILY of insulating fire brick for back-up or exposed use . . . the only family of its kind . . . that gives you a complete range . . . a *quick heating* insulating fire brick for every purpose.

By taking advantage of the quick heating characteristics of these insulating fire brick, you'll benefit through important savings in fuel because of the quicker rise to proper operating temperature in the furnace. This is a result of the low heat storage capacity and low thermal conductivity characteristics of the brick. These factors are especially important where furnaces are being intermittently operated.

The same materials can also be obtained in large size units as Johns-Manville Insulating Fireblok. This product has many advantages over the smaller size fire brick, from both a construction and stability standpoint. They can be quickly applied because they are easy to cut and fit. J-M Insulating Fireblok provide additional heat savings because they reduce the number of joints, and require less mortar for bonding.

Why not have a Johns-Manville insulation expert call to tell you more about ways in which you can save by using these insulations in your furnaces. Write Johns-Manville, Box 290, New York 16, N. Y. for further information.

	JM-1620	JM-20	JM-23	JM-26	JM-28	JM-3000
Densities, lb per cu ft	29	35	42	48	58	63-67
Transverse Strengths, psi	60	80	120	125	120	200
Cold Crushing Strengths, psi	70	115	170	190	150	400
Linear Shrinkage,† percent	0.0 at 2000 F	0.0 at 2000 F	0.3 at 2300 F	1.0 at 2600 F	4.0 at 2800 F	0.8 at 3000 F
Reversible Thermal Expansion, percent	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F
Conductivity* at Mean Temperatures						
500 F	0.77	0.97	1.51	1.92	2.00	3.10
1000 F	1.02	1.22	1.91	2.22	2.50	3.20
1500 F	1.27	1.47	2.31	2.52	3.00	3.35
2000 F	—	1.72	2.70	2.82	3.50	3.60
Recommended Service						
Back up	2000 F	2000 F	2300 F	2600 F	2800 F	3000 F
Exposed	1600 F	2000 F	2300 F	2600 F	2800 F	3000 F

† *24-hr simulative service panel test for JM-3000; 24-hr soaking period for other brick.*

* *Conductivity is expressed in Btu in. per sq ft per F per hour at the designated mean temperatures.*

Note: Above tests are in accordance with A.S.T.M. tentative standards.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville First in INSULATIONS

power generator as optional equipment

Check No. 13 on Reply Card for more Details

Seals Pump Shafts

Balanced pressure seals of the factory-assembled type, made by Sealol Corp., 45 Willard Ave., Providence 5, R. I. eliminate the possibility of lost parts, faulty assembly, or contamination of the precision lapped seal faces. No special machining on the part of the pump manufacturer is required.

Rubber friction members incorporated in the rotating and stationary elements of the seals, provide proper driving and holding action, this design permitting hand assembly of the seal in the pump. Type FCB and GCB seals are built of corrosion resistant materials and are furnished to handle water, oil, kerosene, gasoline, etc. They are offered for shaft sizes from ⅜ to 1½ inches.

Check No. 14 on Reply Card for more Details

• • •

PREVENT DIE DAMAGE: Magnesium safety tongs, available from Magline Inc., Pinconning, Mich., are designed to crush if caught within the die opening without inflicting any damage to the die itself. Tongs permit easy one-hand operation and weigh only 6 ounces.

Check No. 15 on Reply Card for more Details

INDUSTRIAL GLOVES: Three new lines of Stanzoil industrial coated canvas gloves are announced by Pioneer Rubber Co., Willard, O. They are the red neoprene coated Extra-Duty Safety line and black neoprene coated Heavy-Duty and Super-Duty lines. All gloves are coated with Du-Pont neoprene, have nonslip grip, inserted thumb and preflex palm design.

Check No. 16 on Reply Card for more Details

LEADS THE WAY: Light Warden instant, automatic emergency exit light is offered by Electric Cord Co., New York 7, N. Y. If regular source of lighting power should fail, the light will operate instantly and automatically from power furnished by batteries within the unit. In emergencies it also furnishes a powerful downward beam to light the floor area.

Check No. 17 on Reply Card for more Details

HOT SPOT: Localized warming of chilly working areas is accomplished by the new Dura-Thermal mat, announced by Walter B. Snook Enterprises, Palo Alto, Calif. It combines features of a wire coil doormat with a large area electric element. Coils of hard steel wire are wound over a 280-w, 120-v metal encased element, distributed over the 16 x 27-inch mat area in a pattern to assure even, overall heating. This is enclosed in heavy frame with protective rails of aluminum. Mat is also waterproofed.

Check No. 18 on Reply Card for more Details

RUST PREVENTIVE: Saf-pHilm rust preventive, developed by Swan-Finch Oil Corp., New York 20, N. Y., is a new dark-colored, solvent type, organic metal preservative for the protection of highly finished surfaces, parts and equipment prior to storage or shipment. It is a fast drying transparent film.

Check No. 19 on Reply Card for more Details

SNAP-ACTION SWITCHES: Featuring one-way momentary action, a new type of precision, snap-action electrical switches is introduced by Exhibit Supply Co., Chicago, Ill. They permit use of simplified controls and provide definite one-way "on" period. Effective applications include: Control of automatic sequence movements, positioning switches, limiting action of machine member, initiating time cycles.

Check No. 20 on Reply Card for more Details

DETERMINES MOISTURE: Gordon-Campbell moisture tester for foundry sand and other similar materials, developed by Claud S. Gordon Co., Chicago 16, Ill., is a self-contained instrument with sensitive balance and heat bulb for drying material by radiant heat. The gravimeter principle employed in the unit makes the determination test quickly and automatically, showing moisture percentage on the dial.

Check No. 21 on Reply Card for more Details

LATCH FOR CABINETS: Providing a flush surface, the new series M-1000 Tite-Seal latch made by Modern Metal Spinning & Mfg. Co., Los Angeles, Calif., is used on custom-built metal cabinets, inspection doors on furnaces, and air conditioning equipment and refrigerator equipment.

Check No. 22 on Reply Card for more Details

PROTECTS THE EYES: American Optical Co., Southbridge, Mass., announces bi-colored fused lenses designed to protect the eyes of workers engaged in heat treating and furnace operations, scarfing and burning operations, some open hearth and blast furnace work, kiln processes and welding. The one-piece lenses are beveled to fit spectacle goggles or cup-type goggles and are made in regular and 6-curve round and FV3 shapes.

Check No. 23 on Reply Card for more Details

FOR CLOSE QUARTERS: Designated as Allspeed drive, a new variable speed transmission series is introduced by Worthington Pump & Machinery Corp., Harrison, N. J. Line will consist of six models rated at 1, 3, 5, 7½, 10 and 15 hp, respectively and will offer variations of 16 to 1, 10 to 1, 9 to 1, 8 to 1, 6 to 1, and 4 to 1, respectively. Its tandem belt design is particularly suited to applications where space limitations require extreme compactness.

Check No. 24 on Reply Card for more Details

NO STRETCH: A new type of flat leather belting incorporating rayon tire cord insert to assure stretch resistance is being produced by Chas. A. Schieren Co., New York, N. Y. It consists of a layer of rayon tire cords cemented between two layers of Duxbak leather belting. Belt can be scarfed and made endless.

Check No. 25 on Reply Card for more Details

METERING PUMP: Milton Roy Co., Philadelphia 18, Pa., introduces the miniPump, a positive displacement type metering pump having a reciprocating plunger of ⅛-inch diameter. A cam, driven by a fractional gearhead motor, actuates the spring loaded cam follower attached to the plunger. The pump is for handling clean liquids.

Check No. 26 on Reply Card for more Details

POWER EXHAUSTER: Air-Max power exhauster is designed by Gallaher Co., Omaha 3, Nebr., to handle ventilation problems where it is desired to move maximum amounts of dry, uncontaminated air at minimum horsepower. The self-contained unit is extremely low and requires no penthouse and occupies waste roof space. Where high upward discharge is required, unit is supplied without mushroom cover.

Check No. 27 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

SLIGHT slackening af activity is indicated in the steel and metalworking industries over the holidays. Some letdown in operations is expected over the Christmas and New Year weekends, but curtailments will not be as sharp as during normal times. Some metalworking shops will extend shutdowns beyond the holidays to permit usual seasonal inventory-taking. But suspensions generally will be limited with prompt resumption of pre-holiday schedules indicated at most plants the first week in January.

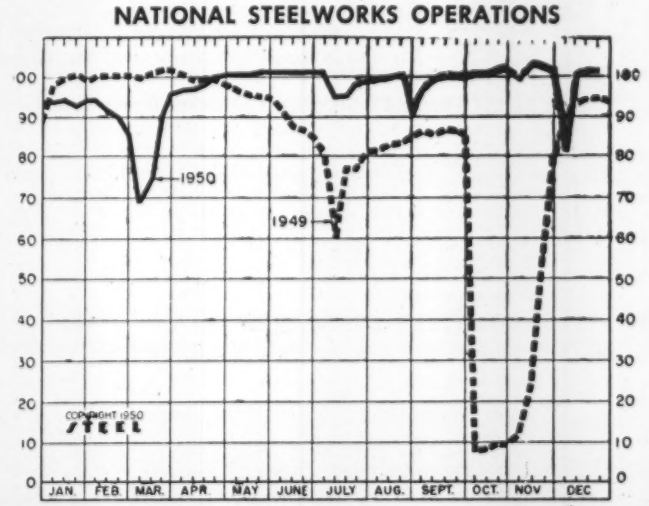
PRODUCTION— Record-breaking output of steel and pig iron was achieved in the year now closing. Total production of steel is estimated in excess of 96,500,000 net tons of ingots, equivalent to about 71,410,000 tons of finished steel. Previous record was established in 1944 when 89,641,600 net tons of ingots, about 63,250,519 tons of finished steel, poured from the furnaces. Pig iron output this year is estimated at 65,704,000 tons. Previous record year also was 1944 when 62,072,683 tons were produced. Output of both steel and pig iron in 1950 would have been still greater had it not been for production losses attending the late November blizzard and curtailments throughout the year due to sporadic labor difficulties and raw material shortages.

OPERATIONS—Steelmakers are pushing production to the limit of available facilities as the year closes. Last week the national ingot rate held unchanged at 101.5 per cent of capacity. Operations for the year are estimated to average 96 per cent of capacity. District rates last week rose 9 points in St. Louis to 95 per cent, 1 point to 105 in Youngstown, ½ point to 100.5 in Wheeling, ½ point to 103.5 in Pittsburgh, ½ point to 101.5 in Cleveland, ½ point to 105.5 in the Far West, and 9 points to 105 in Chicago. Declines were reported of 5 points to 85 per cent in New England and 2 points to 98 in Eastern Pennsylvania. Operations held unchanged at 106 in Detroit, 104 in Buffalo, 102 in Cincinnati and 100 per cent in Birmingham.

SUPPLY— Civilian goods manufacturers are encountering increasing difficulty covering their needs. Their mill allotments for February have been cut sharply, and further reductions in quotas for succeeding months are indicated with defense requirements expected to rise to flood tide in the first and second quarters of next year. Except for rated tonnage the mills generally are booking few orders beyond February and continued shrinkage of commercial tonnage throughout first quarter is anticipated. Following the recently established allocation of 8000 tons of steel monthly for Canadian carbuilders, an allotment program for the diesel locomotive builders is under consideration. Still another, and far more extensive program is pending for the petroleum industry. Requirements under this proposed allocation are reported to run around 1 million tons monthly. In face of the prospective steady drain of steel from civilian goods channels, more manufacturers are stepping up efforts to get into defense work.

PRICES— Whether steel is included in the Economic Stabilization Agency's move to roll back prices voluntarily to Dec. 1 levels is uncertain. The United States Steel Corp. and several other large producers date their recent increases as of Dec. 1. Many other producers, however, did not take price action until after Dec. 1 and this gives rise to the question whether such makers are expected to rescind any increases effected since that date. At the moment the market is firmly established at the higher levels. STEEL's weighted index on finished steel holds at 167.76, as does the arithmetical composite at $103.50. The revised pricing formula is holding the steelmaking scrap composite steady at $45.50 while pig iron is unchanged with No. 2 foundry, $52.54, basic, $52.16, and malleable, $53.27.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Dec. 23	Change	Same Week 1949	Same Week 1948
Pittsburgh	103.5	+ 0.5*	96.5	80
Chicago	105	+ 9*	98.5	85
Eastern Pa.	98	— 2	85	83.5
Youngstown	105	+ 1	98	85
Wheeling	100.5	+ 0.5	91	89.5
Cleveland	101.5	+ 0.5*	92.5	94
Buffalo	104	0	103.5	104
Birmingham	100	0	100	98
New England	85	— 5	85	86
Cincinnati	102	0	104	90
St. Louis	95	+ 9	84.5	79.5
Detroit	106	0	106	89
Western	105.5	+ 0.5	90	..
Estimated national rate	101.5	0	94.5	88

Based on weekly steelmaking capacity of 1,906,268 net tons for first half and 1,928,721 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. *Change from revised rate.

Composite Market Averages

	Dec. 21 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)..	167.67	167.67	157.76	156.83	101.87
Index in cents per lb.	4.545	4.545	4.274	4.249	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$103.50	$100.53	$95.09	$92.09	$58.27
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	49.54	46.10	25.42
Basic Pig Iron, GT	52.16	52.16*	49.04	45.60	24.75
Malleable Pig Iron, GT....	53.27	53.27	50.27	47.27	26.04
Steelmaking Scrap, GT ...	45.50	45.50	41.00	27.25	19.17

* Revised

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point. All prices for latest week preliminary.

FINISHED MATERIALS

	Dec. 21 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.70	3.70	3.45	3.45	2.25
Bars, H.R., Chicago	3.70	3.70	3.45	3.45	2.25
Bars, H.R., del. Philadelphia	4.18	4.18	3.93	3.93	2.57
Bars, C.F., Pittsburgh....	4.55	4.55	4.15	4.10–15	2.75
Shapes, Std., Pittsburgh ..	3.65	3.65	3.40	3.40	2.10
Shapes, Std., Chicago	3.65	3.65	3.40	3.40	2.10
Shapes, del. Philadelphia..	3.90	3.90	3.46	3.46	2.215
Plates, Pittsburgh	3.70	3.70	3.50	3.50	2.25
Plates, Chicago	3.70	3.70	3.50	3.50	2.25
Plates, Coatesville, Pa. ...	4.15	4.15	3.90	3.60	2.25
Plates, Sparrows Point, Md.	3.70	3.70	3.50	3.50	2.25
Plates, Claymont, Del. ...	4.15	4.15	3.90	3.60	2.25
Sheets, H.R., Pittsburgh..	3.60–75	3.60–75	3.35	3.35	2.20
Sheets, H.R., Chicago	3.60	3.60	3.35	3.35	2.20
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.10	4.10	3.05
Sheets, C.R., Chicago	4.35	4.35	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.80	4.80	4.40	4.40	3.70
Strip, H.R., Pittsburgh....3.75–4.00		3.75–4.00	3.50–75	3.25	2.10
Strip, H.R., Chicago	3.50	3.50	3.25	3.25	2.10
Strip, C.R., Pittsburgh 4.65–5.25		4.65–5.25	4.15–4.85	4.15	2.80
Strip, C.R., Chicago.....	4.50–90	4.50–90	4.30	4.00–15	2.90
Strip, C.R., Detroit 4.35–5.60		4.35–5.60	4.35–5.10	4.20–40	2.90
Wire, Basic, Pittsburgh ..4.85–5.10		4.85–5.10	4.50–75	4.50	2.75
Nails, Wire, Pittsburgh....5.90–6.20		5.90–6.20	5.30–60	5.30	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$66.00	$66.00	$63.00	$63.00	$42.00
Wire rods, 7/32-⅜", Pitts.....	4.10–30	4.10–30	3.85	3.85	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$53.00	$53.00	$50.00	$47.00	$26.25
Basic, Valley	52.00	52.00	49.00	46.00	25.25
Basic, del. Phila.	56.39	56.39	53.39	49.44	27.09
No. 2 Fdry, Pitts.	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Chicago	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Valley	52.50	52.50	49.50	46.50	25.75
No. 2 Fdry, Del. Phila. ...	56.89	56.89	53.89	49.94	27.59
No. 2 Fdry, Birm.	48.88	48.88	45.88	39.38	22.13
No. 2 Fdry (Birm.) del. Cin.	55.58	55.58	52.58	46.08	25.81
Malleable Valley	52.50	52.50	49.50	46.50	25.75
Malleable, Chicago	52.50	52.50	49.50	46.50	25.75
Charcoal, Lyles, Tenn.	66.00	66.00	62.00	60.00	33.00
Ferromanganese, Etna, Pa.	188.00	188.00	175.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts...	$46.50	$46.50	$44.00	$30.00	$20.00
No. 1 Heavy Melt. E. Pa..	45.00	45.00	39.00	23.75	18.75
No. 1 Heavy Melt. Chicago	45.00	45.00	40.00	27.00	18.75
No. 1 Heavy Melt. Valley.	46.25	46.25	43.75	30.25	20.00
No. 1 Heavy Met. Cleve...	45.75	45.75	43.25	27.25	19.50
No. 1 Heavy Melt. Buffalo.	49.88	49.88	41.50	29.75	19.25
Rails, Rerolling, Chicago..	67.00	67.00	64.50	41.50	22.25
No. 1 Cast, Chicago	63.00	63.00	59.00	38.50	20.00

COKE, Net Ton

Beehive, Furn., Connlsvl...	$14.75	$14.75	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	17.50	16.75	16.50	15.50	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.00

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	16.80	11.80	6.35
Tin, New York 146.00		142.00	144.00	78.00	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	32.00	32.00	32.00	14.50
Nickel, refinery, duty paid.	50.50	50.50	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$55.50
Brooklyn,N.Y.,del.	....	58.79	59.29	....
Newark,del.	56.63	57.13	57.63	58.13
Philadelphia,del.	56.39	56.89	57.39	57.89
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	....
Birmingham R2	48.38	48.88	....	....
Birmingham S9	48.38	48.88	....	....
Woodward,Ala. W15	48.38	48.88	....	....
Cincinnati,del.	....	55.58	....	....
Buffalo District				
Buffalo R2	52.00	52.50	53.00	....
Buffalo H1	52.00	52.50	53.00	....
Tonawanda,N.Y., W12	52.00	52.50	53.00	....
No.Tonawanda,N.Y., T9	....	52.50	53.00	....
Boston,del.	61.26	61.76	62.20	....
Rochester,N.Y.,del.	54.63	55.13	55.63	....
Syracuse,N.Y.,del.	55.58	56.08	56.58	....
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. C3	52.00	....	52.50	....
IndianaHarbor,Ind. I-2	52.00	....	52.50	....
So.Chicago,Ill. W14	52.00	52.50	52.50	....
So.Chicago,Ill., Y1	52.00	52.50	52.50	....
So.Chicago,Ill. C3	52.00	....	52.50	53.00
Milwaukee,del.	53.89	54.39	54.39	54.89
Muskegon,Mich.,del.	....	57.98	57.98	....
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	....
Akron, del. from Cleve.	54.39	54.89	54.89	54.39
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	....
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	*53.25*	*53.75*	....
Fontana,Calif. K1	58.00	58.50	....	....
Geneva,Utah G1	52.00	52.50	....	....
Seattle,Tacoma,Wash.,del.	....	60.20	....	....
Portland,Oreg.,del.	....	60.20	....	....
LosAngeles,SanFrancisco,del.	59.70	60.20	....	....
GraniteCity,Ill. M10	53.90	54.40	54.90	....
St.Louis,del. (inc. tax)	54.65	55.15	55.65	....
Ironton,Utah C11	52.00	52.50	....	....
LoneStar,Tex. L6	48.00	*48.50	48.50	....
Minnequa,Colo. C10	54.00	55.00	55.00	....
Pittsburgh District				
Nevilleisland,Pa. P6	....	52.50	52.50	53.00
Pitts.,N&S. sides, Ambridge, Aliquippa, del.	....	53.69	53.69	54.19
McKeesRocks,del.	....	53.45	53.45	53.95
Lawrenceville,Homestead, McKeesport,Monaca,del	....	53.94	53.94	54.44
Verona,del.	....	54.40	54.40	54.90
Brackenridge,del.	....	54.63	54.63	55.13
Bessemer,Pa. C3	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. C3	52.00	....	....	....
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	54.00	....	....	....
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati,del.	57.01	57.51	....	....
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	....
Youngstown Y1	52.00	52.50	52.50	....
Mansfield,O.,del.	56.26	56.76	56.76	57.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$62.50
Buffalo H1	63.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls,N.Y. P15	$83.00
Keokuk,Iowa, Openhearth & Fdry, frt, allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb. piglets, 16% Si, frt. allowed K2	95.50
Wenatchee,Wash., O.H. & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$66.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$57.00
Steelton,Pa. B2	60.00
Philadelphia delivered	63.00
Troy,N.Y. R2	60.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Dec. 21, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$76.00
Munhall,Pa. C3 ....52.00
INGOTS, Alloy (NT)
Detroit R7 ....$54.00
Fontana,Calif. K1 ....77.00
Houston,Tex. S5 ....62.00
Midland,Pa. C18 ....54.00
Munhall,Pa. C3 ....54.00
So.Duquesne,Pa. C3 ....54.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)
Bessemer,Pa. C3 ....$56.00
Clairton,Pa. C3 ....56.00
Ensley,Ala. T2 ....56.00
Fairfield,Ala. T2 ....56.00
Fontana,Calif. K1 ....75.00
Gary,Ind. C3 ....56.00
Johnstown,Pa. B2 ....56.00
Lackawanna,N.Y. B2 ..56.00
Munhall,Pa. C3 ....56.00
So.Chicago,Ill. C3 ....56.00
So.Duquesne,Pa. C3 ....56.00

Carbon, Forging (NT)
Bessemer,Pa. C3 ....$66.00
Buffalo R2 ....66.00
Canton,O. R2 ....66.00
Clairton,Pa. C3 ....66.00
Cleveland R2 ....66.00
Conshohocken,Pa. A3 ..73.00
Detroit R7 ....69.00
Ensley,Ala. T2 ....66.00
Fairfield,Ala. T2 ....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 ....66.00
Geneva,Utah G1 ....66.00
Houston,Tex. S5 ....74.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2 ..66.00
LosAngeles B3 ....85.00
Munhall,Pa. C3 ....66.00
Seattle B3 ....85.00
So.Chicago C3, R2 ....66.00
So.Chicago W14 ....63.00
So.Duquesne,Pa. C3 ....66.00
So.SanFrancisco B3 ....85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$70.00
Buffalo R2 ....70.00
Canton,O. R2 ....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 ....73.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 ....70.00
Houston,Tex. S5 ....78.00
Ind.Harbor,Ind. Y1 ....66.00
Johnstown,Pa. B2 ....70.00
Lackawanna,N.Y. B2 ..70.00
Los Angeles B3 ....90.00
Massillon,O. R2 ....70.00
Midland,Pa. C18 ....70.00
Munhall,Pa. C3 ....70.00
So.Chicago C3, R2 ....70.00
So.Chicago W14 ....66.00
So.Duquesne,Pa. C3 ....70.00
Warren,O. C17 ....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ....$82.00
Cleveland R2 ....82.00
Fontana,Calif. K1 ..100.00
Gary,Ind. C3 ....82.00
Massillon,O. R2 ....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. C3 ....82.00

SHEET BARS (NT)
Fontana,Calif. K1 ....$86.00

SKELP
Aliquippa,Pa. J5 ....3.45
Munhall,Pa. C3 ....3.35
Warren,O. R2 ....3.35
Youngstown C3, R2 ....3.35

WIRE RODS
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 ....3.85
Cleveland A7 ....4.10
Donora,Pa. A7 ....4.10
Fairfield,Ala. T2 ....4.10
Fontana,Calif. K1 ....4.60
Houston,Tex. S5 ....4.50
Johnstown,Pa. B2 ....4.10
Joliet,Ill. A7 ....4.10
LosAngeles B3 ....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 ....4.30
No.Tonawanda,N.Y. B11 4.10
Pittsburg,Calif. C11 ....4.75
Portsmouth,O. P12 ....4.30
Roebling,N.J. R5 ....4.20
So.Chicago,Ill. R2 ....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 ....4.10
Torrance,Calif. C11 ....4.90
Worcester A7 ....4.40

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ....3.65
Bessemer,Ala. T2 ....3.65
Bethlehem,Pa. B2 ....3.70
Clairton,Pa. C3 ....3.65
Fairfield,Ala. T2 ....3.65
Fontana,Calif. K1 ....4.25
Gary,Ind. C3 ....3.65
Geneva,Utah G1 ....3.65
Houston,Tex. S5 ....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. C3 ....3.65
Niles,Calif.(22) P1 ....4.85
Phoenixville,Pa. P4 ....4.95
Portland,Oreg. O4 ....4.50
Seattle B3 ....4.30
So.Chicago,Ill. C3, W14 3.65
So.SanFrancisco B3 ....4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 ....3.90
Alloy Stand. Shapes
Clairton,Pa. C3 ....4.35
Fontana,Calif. K1 ....5.25
Munhall,Pa. C3 ....4.35
So.Chicago,Ill. C3 ....4.35
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ....5.50
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. C3 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.05
Gary,Ind. C3 ....5.50
Geneva,Utah G1 ....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 ....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 ....6.05
Munhall,Pa. C3 ....5.50
Seattle B3 ....6.10
So.Chicago,Ill. C3 ....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 ....6.00
Wide Flange
Bethlehem,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. C3 ....3.65
So.Chicago,Ill. C3 ....3.65
H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. C3 ....5.45
So.Chicago,Ill. C3 ....5.45

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. C3 ....4.45
So.Chicago,Ill. C3 ....4.45

BEARING PILES
Munhall,Pa. C3 ....3.65
So.Chicago,Ill. C3 ....3.65

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.65
Bessemer,Ala. T2 ....5.65
Clairton,Pa. C3 ....5.65
Cleveland J5, R2 ....5.65
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 ....5.85
Fairfield,Ala. T2 ....5.65
Fontana,Calif. K1 ....6.25
Gary,Ind. C3 ....5.65
Geneva,Utah G1 ....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 ....5.65
Munhall,Pa. C3 ....5.65
Pittsburgh J5 ....5.65
Seattle B3 ....6.55
Sharon,Pa. S3 ....5.70
So.Chicago,Ill. C3 ....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 ....5.65
Youngstown Y1 ....6.15

PLATES, Open-Hearth Alloy
Coatesville,Pa. L7 ....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 ....5.40
Gary,Ind. C3 ....4.75
Johnstown,Pa. B2 ....4.75
Munhall,Pa. C3 ....4.75
Sharon,Pa. S3 ....5.20
So.Chicago,Ill. C3 ....4.75
SparrowsPoint,Md. B2 ..4.75

FLOOR PLATES
Cleveland J5 ....4.75
Conshohocken,Pa. A3 ..4.75
Harrisburg,Pa. C5 ....5.95
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. C3 ....4.75
So.Chicago,Ill. C3 ....4.75

PLATES (Universal Mill)
Fontana,Calif. K1 ....4.60

PLATES, Carbon A.R.
Fontana,Calif. K1 ....5.45

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ....3.70
Ashland,Ky.(15) A10 ..3.70
Bessemer,Ala. T2 ....3.70
Clairton,Pa. C3 ....3.70
Claymont,Del. W16 ....4.15
Cleveland J5, R2 ....3.70
Coatesville,Pa. L7 ....4.15
Conshohocken,Pa. A3 ..4.15
Ecorse,Mich. G5 ....3.75
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....4.30
Gary,Ind. C3 ....3.70
GraniteCity,Ill. G4 ....4.40
Geneva,Utah G1 ....3.70
Harrisburg,Pa. C5 ....4.95
Houston,Tex. S5 ....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. C3 ....3.70
Pittsburgh J5 ....3.70
Seattle B3 ....4.60
Sharon,Pa. S3 ....3.95
So.Chicago,Ill. C3, W14 3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 ....3.70
Weirton,W.Va. W6 ....4.00
Youngstown C3, R2, Y1 3.70

PLATES, Wrought Iron
Economy,Pa. B14 ....8.60

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ..3.95
Ashland,lcl.(15) A10 ..4.45
Cleveland,c.l. R2 ....4.30
Warren,O.cl. R2 ....4.30

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 ....3.70
Alton,Ill.(1) L1 ....3.45
Atlanta,Ga. A11 ....4.25
Bessemer,Ala. T2 ....3.70
Buffalo R2 ....3.70
Canton,O. R2 ....3.70
Clairton,Pa. C3 ....3.70
Cleveland R2 ....3.70
Detroit R7 ....3.85
Ecorse,Mich. G5 ....3.65
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....4.35
Gary,Ind. C3 ....3.70
Houston,Tex. S5 ....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.40
Milton,Pa. B6 ....4.20
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 ....4.17
N.Tonawanda,N.Y. B11 3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 ....3.70
Portland,Oreg. O4 ....4.65
Seattle B3, N14 ....4.45
So.Chicago C3, R2, W14 3.70
So.Duquesne,Pa. C3 ....3.70
So.SanFran.,Cal. B3 ....4.45
Struthers,O. Y1 ....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 ....3.85
Youngstown C3, R2 ....3.70

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 ....3.70
Atlanta A11 ....4.25
Johnstown,Pa. B2 ....3.70
Lackawanna,N.Y. B2 ..3.70
Niles,Calif. P1 ....5.05
Portland,Oreg. O4 ....4.65
SanFrancisco S7 ....4.85

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ....3.90

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.30
Buffalo R2 ....4.30
Canton,O. R2 ....4.30
Canton,O.(29) T7 ....3.95
Clairton,Pa. C3 ....4.30
Detroit R7 ....4.45
Ecorse,Mich. G5 ....4.25
Fontana,Calif. K1 ....5.30
Gary,Ind. C3 ....4.30
Houston,Tex. S5 ....4.70
Ind.Harbor,Ind. I-2, Y1 4.30
Johnstown,Pa. B2 ....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 ....5.35
Massillon,O. R2 ....4.30
Midland,Pa. C18 ....4.30
So.Chicago C3, R2, W14 4.30
So.Duquesne,Pa. C3 ....4.30
Struthers,O. Y1 ....4.30
Warren,O. C17 ....4.30
Youngstown C3 ....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 ....4.55
Fontana,Calif. K1 ....5.30
Gary,Ind. C3 ....4.55
Youngstown C3 ....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ....5.55
Atlanta A11 ....5.35
Bessemer,Ala. T2 ....5.55
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. C3 ....5.55
Cleveland R2 ....5.55
Ecorse,Mich. G5 ....5.65
Fairfield,Ala. T2 ....5.55
Fontana,Calif. K1 ....6.60
Gary,Ind. C3 ....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1 ..6.05
Johnstown,Pa. B2 ....5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 ....6.25
Pittsburgh J5 ....5.55
Seattle B3 ....6.30
So.Duquesne,Pa. C3 ....5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 ....6.05
Youngstown C3 ....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.55
BeaverFalls,Pa.M12,R2 ..4.55
Buffalo B5 ....4.60
Camden,N.J. P13 ....5.00
Carnegie,Pa. C12 ....4.55
Chicago W18 ....4.55
Cleveland A7, C20 ....4.55
Detroit P17 ....4.70
Donora,Pa. A7 ....4.55
Ecorse,Mich. G5 ....4.35
Elyria,O. W8 ....4.55
FranklinPark,Ill. N5 ....4.55
Gary,Ind. R2 ....4.55
GreenBay,Wis. F7 ....4.55
Hammond,Ind. L2, M13 ..4.55
Hartford,Conn. R2 ....5.10
Harvey,Ill. B5 ....4.55
LosAngeles R2 ....6.00
Mansfield,Mass. B5 ....5.10
Massillon,O. R8 ....4.55
Midland,Pa. C18 ....4.55
Monaca,Pa. S17 ....4.55
Newark,N.J. W18 ....5.00
Plymouth,Mich. P5 ....4.80
Pittsburgh J5 ....4.55
Putnam,Conn. W18 ....5.10
Readville,Mass. C14 ....5.10
St. Louis,Mo. M5 ....4.95
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ....5.00
Struthers,O. Y1 ....4.55
Waukegan,Ill. A7 ....4.55
Youngstown F3, Y1 ....4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 ....5.40
Buffalo B5 ....5.40
Camden,N.J. P13 ....5.80
Canton,O. R2 ....5.40
Canton,O.(29) T7 ....4.90
Carnegie,Pa. C12 ....5.40
Chicago W18 ....5.40
Cleveland A7 ....5.45
Cleveland C20 ....5.40
Detroit P17 ....5.55
Donora,Pa. A7 ....5.45
Elyria,O. W8 ....5.40
Gary,Ind. R2 ....5.40
Hammond,Ind. L2, M13 ..5.40
Hartford,Conn. R2 ....5.85
Harvey,Ill. B5 ....5.40
Lackawanna,N.Y. B2 ....5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 ....5.40
Monaca,Pa. S17 ....5.40
Newark,N.J. W18 ....5.75
Plymouth,Mich. P5 ....5.60
So.Chicago,Ill. R2, W14 ..5.40
Struthers,O. Y1 ....5.40
Warren,O. C17 ....5.40
Waukegan,Ill. A7 ....5.45
Worcester,Mass. A7 ....5.75
Youngstown F3, Y1 ....5.40

RAIL STEEL BARS
ChicagoHts.(3,4)I-2, C2 ..4.75
Dallas,Tex.(4) S20 ....6.00
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4 ..4.63
Huntngtn,W.Va.(3) W7 ..5.50
Marion,O.(3) P11 ....4.75
Moline,Ill.(3) R2 ....3.80
Tonawanda(3,4) B12 ....4.75
Williamsport(3) S19 ....5.00
Williamsport(4) S19 ....5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 ..12.25
Economy,Pa.(S.R.) B14 ..9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt) L5 ..14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ..13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Alton,Ill.(6) L1 ....3.45
Atlanta A11 ....4.25
Buffalo R2 ....3.70
Cleveland R2 ....3.70
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 ....3.70
Fontana,Calif. K1 ....4.35
Gary,Ind. C3 ....3.70
Houston,Tex. S5 ....4.10
Ind.Harbor,Ind. I-2, Y1 3.70
Johnstown,Pa. B2 ....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 ....4.40
Milton,Pa. B6 ....4.20
Minnequa,Colo. C10 ....4.50
Niles,Calif. P1 ....5.05
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 ....3.70
Portland,Oreg. O4 ....4.65
SandSprings,Okla. S5 ....4.60
Seattle B3, N14 ....4.45
So.Chicago,Ill. R2 ....3.70
So.Duquesne,Pa. C3 ....3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2 ..3.70
Struthers,O. Y1 ....3.70
Torrance,Calif. C11 ....4.40
Youngstown C3, R2 ....3.70

BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 ....5.45
Marion,O. P11 ....5.00
Seattle B3, N14 ....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt., ¼-1" B2 ..4.75
Williamsport,Pa. S19 ....5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ....3.60
Butler,Pa. A10 ....3.60
Cleveland J5, R2 ....3.60
Conshohocken,Pa. A3 ....4.00
Detroit M1 ....4.40
Dover,O. R1 ....5.65
Ecorse,Mich.(8) G5 ....3.80
Fairfield,Ala. T2 ....3.60
Fontana,Calif. K1 ....4.50
Gary,Ind. C3 ....3.60
GraniteCity,Ill. G4 ....4.30
Geneva,Utah G1 ....3.70
Ind.Harbor,Ind. I-2, Y1 3.60
Irvin,Pa. C3 ....3.60
Lackawanna,N.Y. B2 ..3.60
Munhall,Pa. C3 ....3.60
Niles,O. N12 ....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 ....3.60
Sharon,Pa. S3 ....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 ....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa. A4 ..3.75
Youngstown C3, Y1 ....3.60

SHEETS, H-R (19 gage)
AlabamaCity,Ala. R2 ..4.75
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 ....5.65
Niles,O. N12 ....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H-R (14-ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich. G5 ....5.50
Fairfield,Ala. T2 ....5.40
Fontana,Calif. K1 ....6.35
Gary,Ind. C3 ....5.40
Ind.Harbor,Ind. I-2 ....5.40
IndianaHarbor,Ind. Y1 ..5.90
Irvin,Pa. C3 ....5.40
Lackawanna(35) B2 ....5.40
Pittsburgh J5 ....5.40
Sharon,Pa. S3 ....5.40
So.Chicago,Ill. C3 ....5.40
SparrowsPoint(36) B2 ..5.40
Warren,O. R2 ....5.40
Weirton,W.Va. W6 ....5.75
Youngstown C3 ....5.40
Youngstown Y1 ....5.90

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.55
Ecorse,Mich. G5 ....6.65
Fontana,Calif. K1 ....7.40
Gary,Ind. C3 ....6.55
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2 ..6.55
Irvin,Pa. C3 ....6.55
Lackawanna(37) B2 ....6.55
Pittsburgh J5 ....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 ....6.55
Weirton,W.Va. W6 ....6.90
Youngstown Y1 ....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.25
Gary,Ind. C3	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. C3	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala., R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. C3	4.80
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. C3	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	7.20
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. C3	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. C3	5.20
Mansfield,O. E6	*6.05*
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.60

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23)F4	6.85

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2	5.60	5.85
Gary C3	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. C3	5.60	5.85
Kokomo C16	6.25	...
MartinsFy,O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.60

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calif. C11	4.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

SHEETS, Well Casing

Fontana,Calif. K1	4.80
TorranceCalif. C11	5.10

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Arma-ture**	**Elec-tric**	**Motor**	**Dyna-mo**
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill.G4 (cut lengths)	...	...	7.95	9.20	...
Ind.Harbor,Ind. I-2	*6.95*	*7.25*	*(34)*	...	...
Mansfield,O. E6 (cut lengths)	*7.10*	*7.25*	*7.75*	*9.00*	*9.80*
Niles,O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift,Pa. C3	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	...	...	...
Vandergrift,Pa. C3	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	...	...	...
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	...	...	*14.75*	*15.25*
Vandergrift,Pa. C3	12.90	13.75	14.75	15.25

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Har. I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. C3	5.85
GraniteCity,Ill. G4	*6.05*
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	6.15

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. C3	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.40
Fairfield,Ala. T2	5.30
Fontana,Cal. K1	5.90
Gary,Ind. C3	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	*6.05*
Seattle B3	*6.30*
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	*6.05*
SparrowsPoint,Md. B2	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown C3	5.30

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15	10.10
Carnegie,Pa. S18	10.60
Cleveland A7	10.00
Dover,O. G6	10.50
Fontana,Calif. K1	11.15
Harrison,N.J. C18	*10.60*
NewBritn.Conn.(10)S15	10.10
Pawtucket,R.I.(11) N8	10.75
Pawtucket,R.I.(12) N8	11.05
Sharon,Pa. S3	10.60
Worcester,Mass. A7	10.30
Youngstown C8	*10.60*

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.75
Warren,O. R2	4.10

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.50
Atlanta A11	4.05
Bessemer, Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.65
Gary,Ind. C3	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	*4.00*
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
N.Tonawanda,N.Y. B11	*3.50*
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	*4.85*
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill. W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown C3, Y1	3.50

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
NewBritn.Conn.(10) S15	5.45
Sharon,Pa. S3	5.85
Youngstown C3	5.50

STRIP, Electro Galvanized

Cleveland A7	4.65
Dover,O. G6	5.00
Warren,O. T5	5.25

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Berea,O. C7	...	*6.80*	*7.40*	*9.35*	*11.65*
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
Bristol,Conn. W1	...	...	7.70	9.65	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11.65
Cleveland A7	4.65	6.45	7.40	9.35	11.65
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11.65
Franklin,Park,Ill. T6	*5.00*	*6.60*	*7.55*	*9.50*	*11.80*
Harrison,N.J. C18	...	...	*7.70*	*9.65*	*11.95*
Mattapan,Mass. T6	*5.50*	*6.75*	*7.70*	*9.65*	*11.95*
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11.65
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11.65
NewHaven,Conn. D2	5.85	6.75	7.35	...	...
NewYork W3	...	*7.10*	*7.70*	*9.65*	*11.95*
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	...	6.80	7.40	9.35	11.65
Worcester,Base	5.85	7.10	7.70	9.65	11.95
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11.65
Trenton,N.J. R5	...	7.10	7.70	9.65	11.95
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11.60
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11.65
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11.95
Worcester,Mass. T6	*5.50*	*6.75*	*7.70*	*9.65*	*11.95*
Youngstown C8	...	*6.80*	*7.40*	*9.35*	*11.65*
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	*10.30*	*12.50*	*15.35*
NewYork W3	...	...	*10.30*	*12.50*	*15.35*

Weirton,W.Va. W6	4.65		
Youngstown C8	*5.25*		

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.35
Butler,Pa. A10	4.65
Cleveland A7, J5	4.65
Dearborn,Mich. D3	5.10
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	6.25
FranklinPark,Ill.(40) T6	*4.90*
Ind.Harbor,Ind. I-2	4.90
Lackawanna,N.Y. B2	4.65
LosAngeles C1	6.10
Mattapan,Mass. T6	*5.50*
Middletown,O. A10	4.65
NewBritain(10) S15	5.35
NewCastle,Pa. B4	5.35
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.15
Pawtucket,R.I. R3	5.75
Pawtucket,R.I.(21) N8	5.85
Riverdale,Ill.(40) A1	4.90
Rome,N.Y. R6	*5.10*
Sharon,Pa. S3	5.35
SparrowsPoint,Md. B2	4.65
Trenton,N.J. R5	6.00
Wallingford,Conn. W2	5.85
Warren,O.(40) T5	5.25
Warren,O. R2	4.65
Weirton,W.Va. W6	4.65
WestLeechburg,Pa. A4	4.65
Youngstown C8, (40)	*5.25*
Youngstown Y1	4.65

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.70
Dover,O. G6	7.30
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.25

Key to Producing Companies

A1	Acme Steel Co.	C10	Colorado Fuel & Iron
A3	Alan Wood Steel Co.	C12	Columbia Steel & Shaft.
A4	Allegheny Ludlum Steel	C13	Columbia Tool Steel Co.
A7	American Steel & Wire	C14	Compressed Steel Shaft
A8	Anchor Drawn Steel Co.	C16	Continental Steel Corp.
A9	Angell Nail & Chaplet	C17	Copperweld Steel Co.
A10	Armco Steel Corp.	C18	Crucible Steel Co.
A11	Atlantic Steel Co.	C19	Cumberland Steel Co.
A13	American Cladmetals Co.	C20	Cuyahoga Steel & Wire
B1	Babcock & Wilcox Tube	D2	Detroit Steel Corp.
B2	Bethlehem Steel Co.	D3	Detroit Tube & Steel
B3	Beth. Pac. Coast Steel	D4	Disston & Sons, Henry
B4	Blair Strip Steel Co.	D6	Driver Harris Co.
B5	Bliss & Laughlin Inc.	D7	Dickson Weatherproof Nail Co.
B6	Bolardi Steel Corp.	E1	Eastern Gas&Fuel Assoc.
B8	Braeburn Alloy Steel	E2	Eastern Stainless Steel
B11	Buffalo Bolt Co.	E4	Electro Metallurgical Co.
B12	Buffalo Steel Co.	E5	Elliott Bros. Steel Co.
B14	A. M. Byers Co.	E6	Empire Steel Corp.
C1	Calif. Cold Rolled Steel	F2	Firth Sterling Steel
C2	Calumet Steel Div., Borg-Warner Corp.	F3	Fitzsimons Steel Co.
C3	Carnegie-Illinois Steel	F4	Follansbee Steel Corp.
C4	Carpenter Steel Co.	F5	Franklin Steel Div., Borg-Warner Corp.
C5	Central Iron & Steel Div. Barium Steel Corp.	F6	Fretz-Moon Tube Co.
C7	Cleve.Cold.Roll.Mills Co.	F7	Ft. Howard Steel & Wire
C8	Cold Metal Products Co.	G1	Geneva Steel Co.
C9	Colonial Steel Co.	G2	Globe Iron Co.
		G3	Globe Steel Tubes Co.
		G4	Granite City Steel Co.
		G5	Great Lakes Steel Corp.
		G6	Greer Steel Co.
		H1	Hanna Furnace Corp.
		H4	Heppenstall Co.
		I-1	Igoe Bros. Inc.
		I-2	Inland Steel Co.
		I-3	Interlake Iron Corp.
		I-4	Ingersoll Steel Div., Borg-Warner Corp.
		J1	Jackson Iron & Steel Co.
		J3	Jessop Steel Co.
		J4	Johnson Steel & Wire Co.
		J5	Jones & Laughlin Steel
		J6	Joslyn Mfg. & Supply
		J7	Judson Steel Corp.
		J8	Jersey Shore Steel Co.
		K1	Kaiser Steel Corp.
		K2	Keokuk Electro-Metals
		K3	Keystone Drawn Steel
		K4	Keystone Steel & Wire
		L1	Laclede Steel Co.
		L2	LaSalle Steel Co.
		L3	Latrobe Electric Steel
		L5	Lockhart Iron & Steel
		L6	Lone Star Steel Co.
		L7	Lukens Steel Co.
		C11	Columbia Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	*4.05*
Riverdale,Ill. A1	3.90
Sharon,Pa. B3	4.15
Youngstown C3	3.75

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	6.25
Buffalo W12	5.90
Cleveland A7	6.25
Donora,Pa. A7	6.25
Duluth A7	6.25
Fostoria,O. S1	6.20
Johnstown,Pa. B2	6.25
LosAngeles B3	7.20
Millbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	6.25
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.20
Roebling,N.J. R5	6.55
Portsmouth,O. P12	6.25
So.Chicago,Ill. R2	6.25
So.SanFrancisco C10	*6.85*
SparrowsPoint,Md. B2	6.35
Struthers,O. Y1	6.25
Trenton,N.J. A7	6.55
Waukegan,Ill. A7	6.25
Worcester A7, J4, T6	6.55

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	5.35
Cleveland A7	5.85
Crawfordsville,Ind. MS	6.20
Detroit D2	6.20
Dover,O. G6	6.20
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.70
FranklinPark,Ill. T6	*6.20*
Massillon,O. R8	5.85
Monessen,Pa. P16	5.85
Monessen,Pa. P7	6.10
NewHaven,Conn. D2	6.50
Pawtucket,R.I.(12) NS	6.85
Trenton,N.J. R5	6.15
Worcester,Mass. T6	*6.50*
Worcester A7	6.00

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.90
Buffalo W12	8.45
Chicago W13	8.90
Cleveland A7	8.90
Crawfordsville,Ind. MS	8.95
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.90
Monessen,Pa. P16	8.90
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.90
Roebling,N.J. R5	9.20
Waukegan,Ill. A7	8.90
Worcester,Mass. A7	9.20
Worcester,Mass. T6	*9.20*

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.90
Monessen,Pa. P16	11.40
Roebling,N.J. R5	11.55

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	4.85
Aliquippa,Pa. J5	4.85
Atlanta A11	*5.10*
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.85
Buffalo W12	4.50
Chicago W13	4.85
Cleveland A7	4.85
Cleveland C20	4.55
Crawfordsville,Ind. MS	5.10
Donora,Pa. A7	4.85
Duluth A7	4.85
Fairfield,Ala. T2	4.85
Fostoria,O.(24) S1	5.00
Houston S5	5.25
Johnstown,Pa. B2	4.85
Joliet,Ill. A7	4.85
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	4.95
LosAngeles B3	5.80
Minnequa,Colo. C10	5.10
Monessen,Pa. P7	5.10
Newark, 6-8ga. 1-1	*5.50*
No.Tonawanda B11	*4.85*
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.80
Portsmouth,O. P12	5.25
Rankin,Pa. A7	4.85
So.Chicago,Ill. R2	4.85
So.SanFrancisco C10	5.80
SparrowsPoint,Md. B2	4.95
Sterling,Ill.(1) N15	4.85
Struthers,O. Y1	4.85
Torrance,Calif. C11	5.80
Waukegan,Ill. A7	4.85
Worcester,Mass. A7, T6	5.15

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Monessen,Pa. P7, P16	5.90
NewHaven,Conn. A7	6.20
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Torrance,Calif. C11	6.85
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Worcester,Mass. A7	6.20

ROPE WIRE	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.55	8.55	8.80
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.55	8.55	8.80
Donora,Pa. A7	8.55	8.55	8.80
Fostoria,O. S1	8.35	8.35	8.60
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P16	8.55	8.55	8.80
Monessen,Pa. P7	8.80	8.80	9.05
NewHaven,Conn. A7	8.85	8.85	9.10
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.55	8.55	8.80
Roebling,N.J. R5	8.85	8.85	9.10
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.55	8.55	8.80
Trenton,N.J. A7	8.85	8.85	9.10
Waukegan,Ill. A7	8.55	8.55	8.80
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4	8.35	8.35	8.60
Worcester,Mass. T6	*8.85*	*8.85*	*9.10*

WIRE, Merchant Quality (6 to 8 gage)

	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	*5.95*	*6.40*
Bartonville(19)K4	5.95	6.15
Buffalo(31) W12	4.50	...
Cleveland A7	5.70	6.15
Crawfordsville MS	5.95	6.40
Donora A7	5.70	6.15
Duluth A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	*6.65*	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer(31) W12	4.80	...
Pitts.Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

WIRE (16 gage)	An'ld Stone	Galv. Stone
Aliquippa J5	10.15	11.85
Bartonville(1) K4	10.25	11.95
Cleveland A7	10.25	12.15
Crawfrdsvle M.S	10.30	12.00
Fostoria,O. S1	10.40	12.40
Johnstown B2	10.15	12.05
Kokomo C16	*10.25*	*11.95*
Minnequa C10	10.40	12.40
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.25	12.15
Prtsmth.(18) P12	10.55	12.30
SparrowsPt. B2	10.25	12.15
Waukegan A7	10.25	12.15

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	136
Aliquippa,Pa. J5	140
Atlanta A11	*143*
Bartonville,Ill.(19) K4	143
Crawfordsville MS	145
Donora,Pa. A7	140
Duluth,Minn. A7	140
Fairfield,Ala. T2	140
Houston,Tex. S5	148
Johnstown,Pa. B2	140
Joliet,Ill. A7	140
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	146
Monessen,Pa. P7	145
Pittsburg,Calif. C11	160
Portsmouth,O.(18) P12	147
Rankin,Pa. A7	140
So.Chicago,Ill. R2	136
So.SanFran.,Calif. C10	160
SparrowsPoint,Md. B2	142
Sterling,Ill.(1) N15	140

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	140
Duluth A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	130
Johnstown,Pa. B2	125
Joliet,Ill. A7	125
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago R2	140
Tonawanda B12	140
Williamsport,Pa. S19	150

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	126
Ala.City,Ala.,17-18ga.R2	213
Aliquippa,Pa.9-14½ga. J5	130
Atlanta A11	*133*
Bartonville,Ill.(19) K4	130
Crawfordsville,Ind. MS	132
Donora,Pa. A7	130
Duluth A7	130
Houston,Tex. S5	138
Fairfield,Ala. T2	130
Johnstown,Pa. B2	130
Johnstown,17ga.,6" B2	204
Johnstown,17ga.,4" B2	207
Joliet,Ill. A7	130
KansasCity,Mo. S5	142
Kokomo,Ind. C16	132
Minnequa,Colo. C10	138
Monessen,Pa. P7	135
Pittsburg,Calif. C11	153
Portsmouth,O.(18) P12	137
Rankin,Pa. A7	130
So.Chicago,Ill. R2	126
Sterling,Ill.(1) N15	130

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	123
Atlanta A11	*126*
Bartonville,Ill.(19) K4	123
Chicago W13	123
Crawfordsville MS	132
Donora,Pa. A7	123
Duluth A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	147
SparrowsPoint,Md. B2	125
Sterling,Ill.(1) N15	123

AXLES

Ind Harbor,Ind. S13	5.60
Johnstown,Pa. B2	5.60

JOINT BARS

Bessemer,Pa. C3	4.70
Fairfield,Ala. T2	4.70
Ind.Harbor,Ind. I-2	4.70
Joliet,Ill. C3	4.70
Lackawanna,N.Y. B2	4.70
Minnequa,Colo. C10	4.70
Steelton,Pa. B2	4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.15
Minnequa,Colo. C10	6.15
Pittsburgh J5	6.15
Seattle B3	6.65
So.Chicago,Ill. R2	6.15
Struthers,O. Y1	6.15
Youngstown R2	6.15

NAILS & STAPLES, Stock to dealers & mfrs. (7)

	Col.
AlabamaCity,Ala. R2	118
Aliquippa,Pa.(13) J5	118
Atlanta A11	*121*
Bartonville,Ill.(19) K4	118
Chicago,Ill. W13	130
Cleveland A9	111
Crawfordsville,Ind. MS	122
Donora,Pa. A7	118
Duluth A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	6.10
Bartonville,Ill.(19) K4	5.95
Crawfordsville,Ind. MS	6.30
Donora,Pa. A7	5.95
Duluth A7	5.95
Johnstown,Pa. B2	5.95
Joliet,Ill. A7	5.95
Kokomo,Ind. C16	6.05
Minnequa,Colo. C10	6.20
Pittsburg,Calif. C11	6.90
Portsmouth,O. P12	6.25
Rankin,Pa. A7	5.95
So.Chicago,Ill. R2	6.10
SparrowsPoint,Md. B2	6.05
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	6.25

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$7.35
Wheeling,W.Va. W10	7.15

TIE PLATES

Fairfield,Ala. T2	4.50
Gary,Ind. C3	4.50
Ind.Harbor,Ind. I-2	4.50
Lackawanna,N.Y. B2	4.50
Minnequa,Colo. C10	4.50
Pittsburg,Calif. C11	4.65
Seattle B3	4.65
Steelton,Pa. B2	4.50
Torrance,Calif. C11	4.65

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(32) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85
Seattle B3	10.10

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. C3	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
Ind.Harbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield.S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Corp.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	23.00	18W,4Cr,3V	140.00
Extra Carbon	27.00	18W,4Cr,2V,9Co	204.00
Spec. Carbon	32.50	19W,4Cr,2V,7Co	204.00
Oil Hardening	35.00	18.25W,4.25Cr,1V,4.75Co	172.00
Cr Hot Wrk	35.00	20.25W,4.25Cr,1.6V,12.25Co	323.00
Hi-Carbon-Cr	63.50	1.5W,4Cr,1V,8.5Mo	78.50
18W,4Cr,1V	110.00	6.4W,4.5Cr,1.9V,5Mo	84.00
18W,4Cr,2V	124.50	6W,4Cr,3V,6Mo	106.50

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3.

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 28 Ga, 36" wide.
(24) Deduct 0.20c for finer than 15 gage.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (⅜" bar elec. furn. billet, 5.03c); to consumers, 5.28c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase, f.o.b. mill.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	29.0	1.5	+0.5	0.5
¼	6.0	0.42	28.5	26.5	26.0	+1.0	+3.0	0.5
⅜	6.0	0.57	23.5	21.5	21.5	+7.0	+9.0	4.0
½	8.5	0.85	36.0	34.0	35.0	14.0	12.0	13.0
¾	11.5	1.13	39.0	37.0	38.0	18.0	16.0	17.0
1	17.0	1.68	41.5	39.5	40.5	21.5	19.5	20.5
1¼	23.0	2.28	42.0	44.0	41.0	22.0	24.0	21.0
1½	27.5	2.78	42.5	41.5	41.5	23.0	21.5	22.0
2	37	3.68	43.0	41.0	42.0	23.5	21.5	22.5
2½	58.5	5.82	43.5	41.5	42.5	24.0	22.0	23.0
3	76.5	7.62	43.5	41.5	42.5	24.0	22.0	23.0

Column A: Etna, Pa. N2; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ¼", 2 points lower on ¼" and ⅜"; following make ½" and larger: Lorain, O., N3; Youngstown R2 and 36½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y1; Alton, Ill. (Lorain base) L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 3½% on ⅛", plus 2½% on ¼", plus 9% on ⅜"; Sharon, Pa. M6, plus 0.5 on ⅛", 1 point lower on ½", ⅜", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 16½% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 point lower on ⅜", 2 points lower on 1", 1½ points lower on 1¼", 2 points lower on 1½" and 2", 1½ points lower on 2½" and 3"; Etna, Pa. N2 and 18½% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	9.5	29.5	9.5
2½	58.5	5.82	32.5	12.5	32.5	12.5
3	76.5	7.62	32.5	12.5	32.5	12.5
3½	92.0	9.20	34.5	14.5	34.5	14.5
4	$1.09	10.89	34.5	14.5	34.5	14.5
5	1.48	14.81	37.0	17.0	37.0	17.0
6	1.92	19.18	37.0	17.0	37.0	17.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6 in.; Lorain, N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	18.06	18.96
1¼	13	14.68	17.05	14.19	16.54
1½	13	16.17	19.08	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.08	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2¾	12	27.71	32.58	26.88	31.60
3	12	29.36	34.58	28.48	33.49
3½	12	30.82	36.27	29.90	35.18

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302	....	....	....	....	19.75	27.50	77.00
304	25.00	28.00–29.50	....	....	20.75–23.50	29.00	77.00
309	30.50	35.00	....	....	....	....	....
310	36.50	41.00	....	....	....	....	144.00
316	29.50	31.50–34.00	....	....	26.00	36.50	....
317	34.50	39.00	....	....	....	....	....
318	33.50	38.00	....	....	....	....	....
321	26.50	31.00	....	....	23.00	....	111.00
347	27.50	30.50–32.00	....	....	24.00	35.00	130.00
405	21.25	27.75	....	....	....	....	....
410	20.75	27.25	....	....	....	....	....
Nickel	31.00	41.00	41.00	54.00	....	....	....
Inconel	39.00	51.00	....	....	....	....	165.00
Monel	32.00	42.00	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ⅝-in. 18.5
- ¾-in. and larger..... 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 26
Blank 34
Plow 34
Step, Elevator, Tap, and Sleigh Shoe 21
Tire bolts 12
Boiler & Fitting-Up bolts 31

NUTS

	Reg.	Heavy
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅝-in.	12	6.5
¾-in.-1½-in.	9	1
1⅝ in. & larger	7.5	1
H.R. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in.	16.5	6.5
¾-in.-1½-in.	12	2
1⅝ in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅝-in.	23	17.5
¾-in. & 1½-in.	19.5	12
1⅝-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.
½-in. & smaller	35	28.5
⅝-in. & ⅝-in.	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
Light		
⅛-in. & smaller		35
½-in. to ⅝-in.		28.5
¾-in. to 1½-in.		26

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish .....56 & 10
Plated finishes.....41 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 47
- ¾-in. through 1 in. ... 40

Longer than 6 in.:
- ⅝-in. & smaller 33
- ¾-in. through 1 in. ... 18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 44
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger .. 24
N.F. thread, all diams... 18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c
7/16-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.00
8 to 16	48,60,72	17.00
7	48,60	18.64
6	48,60	19.95
4,5⅛	40	20.48
3	40	21.53
2½	24,30	22.05
2	24,30	24.15

CARBON

40	100,110	7.65
35	100,110	7.65
30	84,110	7.65
24	72 to 104	7.65
17 to 20	34,90	7.65
14	60,72	8.16
10,12	60	8.42

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.00	36.50	31.25
303...	43.00	40.00	33.75
304...	43.00	38.50	32.75
309...	55.50	54.50	44.25
316...	56.50	58.50	48.75
321...	49.00	48.00	36.75
347...	53.50	52.00	41.25
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

McKeesport, Pa., bars, sheets except Type 416 C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 56.00c and bars 44.75c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 61.50c, strip 63.00c, W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00
Toluol, one deg.... 26.00-33.00
Industrial xylol ... 25.00-33.50

Per ton bulk, ovens

Sulphate of ammonia..$32.-45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $41; less than 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

Sponge Iron Cents
- 98+% Fe, carlots.. 16.00
- Swedish, c.i.f. New York, in bags....7.40-8.50

Electrolytic Iron:
- Annealed, 99.5% Fe 39.50
- Unannealed, 99+% Fe 33.50
- Unannealed, 99+% Fe(minus 325 mesh)48.50

Powder Flakes 44.50

Carbonyl Iron:
- 97.9-99.8%, size 5 to 10 microns..70.00-135.00

Aluminum:
- Carlots, freight allowed 27.50
- Atomized, 500 lb drums, freight allowed 32.50

Brass, 10-ton lots 30.00-33.25

Copper:
- Electrolytic 36.75
- Reduced 33.75-37.00

Lead 23.00

Manganese:
- Minus 100-mesh ... 52.00
- Minus 35 mesh ... 48.00
- Minus 200 mesh ... 56.00

Nickel unannealed .. 75.50

Nickel-Silver, 10-ton lots 43.25

Silicon 34.00

Solder (plus cost of metal) 8.50

Stainless Steel, 302 .. 75.00

Tin $1.575

Zinc, 10-ton lots..23.00-30.50

Tungsten: Dollars
- 99%, minus 80 to 200 mesh, freight allowed:
  - over 1000 lb 2.90
  - 1000 lb 2.95
  - less than 1000 lb. 3.00
- 98.8% minus 65 mesh, freight allowed:
  - 1000 lb and over.. 3.65
  - less than 1000 lb.. 3.75

Molybdenum:
- 99%, minus 80 to 200 mesh,
  - over 500 lb 2.25
  - 200 to 500 lb 2.60
  - less than 200 lb .. 2.75
- 82-88%, freight allowed,
  - 2000 lb and over .. 2.40
  - less than 2000 lb.. 2.45

Chromium, electrolytic
- 99% Cr min. 3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. .$14.50-15.00
Connellsvll.,dry. 17.00-18.00
New River, foundry ...19.50
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens..$22.75
Everett, Mass., ovens
- *New England, del. ‡24.80*

Chicago, ovens 21.00
- Chicago, del. .....†22.45
- Detroit, del. 24.91

Terre Haute, ovens....22.50
Milwaukee, ovens 23.75
Indianapolis, ovens 22.75
- *Chicago, del. 26.62*
- *Cincinnati, del. 25.67*
- *Detroit, del. 26.65*

Ironton, O., ovens 21.50
- Cincinnati, del. 24.06

Painesville, O., ovens ..24.00
- *Buffalo, del. 26.12*
- *Cleveland, del. 25.72*

Erie, Pa., ovens 23.50
Birmingham, ovens 20.30
- Birmingham, del. ...21.35

Philadelphia, ovens 22.70
NevilleIsland,Pa.,ovens 23.00
Swedeland, Pa., ovens..22.00
St. Louis, ovens 24.25
- *St. Louis, del. 25.38*

Portsmouth, O., ovens..21.50
- Cincinnati, del. 24.06

Detroit, ovens 24.00
- *Detroit, del. *25.00*
- *Buffalo, del. 27.04*
- *Flint, del. 26.44*
- *Pontiac, del. 25.39*
- *Saginaw, del. 26.75*

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery w thin switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	6.27	7.29	8.44	6.59	...	6.42	7.29	9.25	6.40	6.58	8.04
New York(c'try)	5.97	6.99	8.14	6.29	...	6.12	6.99	8.95	6.10	6.28	7.74
Boston (city) ..	6.40	7.20	8.49	6.35	...	6.25	7.04	9.25	6.40	6.98	7.88
Boston (c'try) .	6.20	7.00	8.29	6.15	...	6.05	6.84	9.05	6.20	6.78	7.68
Phila. (city) ..	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try) ..	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city) ...	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try) ..	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va. ..	6.50	...	...	6.70	...	6.55	7.70	...	6.60	6.50	8.00
Richmond, Va..	5.90	...	8.10	6.10	...	6.10	6.90	...	6.30	6.05	7.80
Wash. (w'hse) .	6.02	7.26	8.49	6.46	...	6.46	7.26	...	6.56	6.22	7.86
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[9]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[9]	5.35	5.65	6.95
Pitts. (w'hse) .	5.60	6.40*	7.75	5.65-5.95	6.90	5.55	6.40	10.10††	5.70	5.75	7.00
Detroit (w'hse).	5.45-5.78	6.53-6.80	7.99	5.94-5.95	7.75	5.84	6.56	8.91	6.09	6.19-6.35	7.28
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve. (w'hse) .	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city) ..	6.02	6.59	7.34	5.95	...	5.95	6.51	...	6.24	6.34	7.50
Chicago (city) .	5.80	6.60	7.95	5.75	...	5.75	6.50	10.30	5.90	6.00	7.20
Chicago (w'hse)	5.60	6.40	7.75	5.55	...	5.55	6.30	10.10	5.70	5.80	7.00
Milwaukee (city)	5.94	6.74	8.09	5.89	...	5.89	6.74	10.44	6.04	6.14	7.34
Milwau. (c'try)	5.74	6.54	7.89	5.69	...	5.69	6.54	10.24	5.84	5.94	7.14
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[9]	5.78	5.98	7.13
St. L. (w'hse).	5.48	6.25	7.08	5.43	...	5.43	6.08	9.88††[9]	5.58	5.73	6.98
Kans. City(city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
KansCity(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Omaha, Nebr...	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'hm(city) .	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.25
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city)	6.55	8.10	9.05[2]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)..	6.35	7.90	8.85[2]	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
San Francisco..	6.65	7.80[9]	8.65[9]	6.60	...	6.45	8.20	...	6.45	6.50	8.60
Seattle-Tacoma.	7.05	8.60[9]	9.20	7.30	...	6.75	9.10	11.15	6.65	6.75	8.80

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill.,$94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73; chemical-bonded chrome brick, $77; magnesite brick, $99; chemical-bonded magnesite, $88.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic deadburned, ¾" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Narlo, Clay Center, Woodville, Gibsonburg, Bettsville, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	17.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$38-$39
Domestic scheelite, del.	nominal

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	$19.50
45% no ratio	20.00
48% no ratio	27.00
50% no ratio	28.00-28.50
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $70, Palmerton, Pa.; $71, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l., packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 29.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump bulk, 1.50% C grade, 18-20% Si 9.90c per lb of alloy, carload packed, 10.65c, ton lot 11.55c, less ton 12.55c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%,

(*Please turn to page* 98)

Metal Markets Appear Stabilized

Producers of major nonferrous metals expected to maintain present levels under voluntary price controls. Copper, lead and zinc producers meet with ESA early next month

New York—Prices in major nonferrous metal markets are stabilized, at least temporarily, at present levels. This was brought about by the ultimatum issued by the Economic Stabilization Agency to industry last week to roll back prices voluntarily to Dec. 1 levels, or face price ceilings by mandatory control.

Nonferrous metal producers generally have policed their markets closely for many months on this basis, refraining from boosting quotations at a time when actual demand would have supported much higher levels.

There has been no change in copper since the 24.50-cent level was established on Oct. 2; in lead, since the 16.80-cent St. Louis level was set on Oct. 31; in zinc, since the 17.50-cent East St. Louis price was established on Sept. 7; and in aluminum, since Oct. 3 when the 19.00-cent price became effective. The status of nickel and tin, which are largely imported metals, is uncertain at this time. Nickel prices advanced 2½ cents on Dec. 14 to a 50.50-cent basis from a 48-cent base which had held unchanged since May 31, 1950. The next previous change had been on July 22, 1948, when the market rose 5 cents a pound.

Price moves in tin have been sensational since the end of June. The erratic price trend here has been influenced largely by fluctuations in London and Singapore. Competition for the limited world supplies, especially by United States and Great Britain, coupled with uncertainty regarding a continuation of the flow of ore and metal from the Far East, has lifted prices to an all-time high. Many market authorities believe that only an international agreement can restore stability in the market. Attempts in this direction this year, under sponsorship of the United Nations, proved unsuccessful.

Economic Stabilization Agency has arranged meetings with copper, lead and zinc producing executives to meet in Washington to discuss the price situation. The copper group meets Jan. 3; lead and zinc groups, Jan. 4.

Aluminum—A new agreement covering shipments of Canadian aluminum to the United Kingdom and a new financial arrangement between the British government and the Aluminum Co. of Canada have been agreed upon. Under a previous contract, the company is committed to ship 150,000 metric tons of aluminum to U. K. in 1951; it is now reported the British government is planning to place orders for 220,000 tons in 1952 and 1953. Canadian aluminum shipments to U. K. have been averaging 150,000 tons for the last three years.

This has revived interest here in negotiations for importation of Canadian aluminum. National Production Authority will reopen the question with the Canadian government immediately. These discussions are part of the broader program of coordination of Canadian and United States efforts in the economic mobilization for defense.

Tin—National Production Authority ordered a 20 per cent cut in civilian use of tin during February and March. The agency ruled that materials containing 1.5 per cent or more of tin may be used for civilian purposes in January at 100 per cent of the rate of use during the first half of 1950 and at 80 per cent of that rate in February and March.

The amount of tin available for defense and civilian needs in the first half of 1951 is expected to be less than the amount consumed in the first half of 1950. The order urges the use wherever possible of substitute metals that are not in short supply. Use of new pig tin is specifically prohibited in cases where secondary tin can be used.

Inventories of pig tin are restricted to 120-day supply for tin plate makers; to 60-day supply for all other users. Inventories of other materials containing not less than 1.5 per cent tin (except ores and concentrates) are limited to either a 60-day supply or a practicable working minimum, whichever is less.

Scrap dealers are forbidden to add to inventories unless they have disposed of as much scrap in the preceding 60 days as they have on hand at the time of taking a new delivery.

Firms using less than 1000 pounds of pig tin in a month are not required to make a monthly report on NPA Form 7.

Zinc Refinery To Be Expanded

Montreal, Que.—Consolidated Mining & Smelting Co., this city, plans to spend nearly $15 million on construction of various projects in British Columbia. The company plans to build a $3.2 million addition to its Trail electrolytic zinc refinery to boost the latter's zinc production by about 70 tons per day.

The company also has decided to build a $9 million ammonium phosphate plant at Kimberly to increase production of fertilizer. The latter unit will have an annual capacity of about 70,000 tons of ammonium phosphate and facilities to produce about 300 tons daily of sulphuric acid.

In order to provide for increased power requirements at Kimberly, the firm plans to build a high-voltage transmission line from its hydroelectric plants on the Kootenay river.

Copper Conversion Deals Banned

Washington—An immediate ban on "conversion" deals in copper scrap, unless specifically authorized by the National Production Authority, is ordered by the agency. The action was taken by moving up the effective date of a previous regulation, originally scheduled to take effect Jan. 1.

It is NPA's aim to limit conversion deals so that copper processing and distribution can be done through "normal" channels. Ordinarily custom smelters buy scrap, process it and sell it as refined metal to copper users. Conversion deals reduce the amount of scrap available to smelters, because smelters can not match the prices for scrap that are paid in conversion transactions and be able to sell the refined metal at prevailing prices.

NPA said it made its orders effective immediately because scrap dealers and converters had increased their conversion activity to get work done before original effective date.

The regulation says that owners of scrap must get prior approval of NPA if they plan to retain title to the metal during and after processing.

Nickel, Monel Product Prices Up

New York — International Nickel Co. Inc., this city, has issued a revised price schedule covering "A" nickel and monel products. The new base prices, reflecting the advance Dec. 13 on primary nickel, are on the basis of f.o.b. mill: "A" nickel cold-rolled sheets, 74.00c; cold-rolled strip, 80.00c; rods and shapes, 70.00c; plates, 72.00c; seamless tubes, 103.00c. Prices for monel products are: Cold-rolled sheets, 58.00c; cold-rolled strip, 62.00c; rods and shapes, 56.00c; plates, 57.00c; seamless tubes, 93.00c; shot and blocks, 51.00c.

Zinc Shortage Grows in West

San Francisco — Galvanizing firms for the most part are having an extremely difficult time in maintaining operations due to the shortage of zinc. Some complain they are unable to replace zinc used on defense orders for work on additional DO orders. An official of one large galvanizing firm, with DO orders, however, said he is "encouraged" by the co-operation shown by Washington authorities in helping to solve the dilemma. Others declare they have not received indications of relief and fear a partial or entire shutdown before long.

Antimony Import Duty Raised

Washington—Import duty on antimony metal has been increased to 2 cents a pound; that on tungsten ore, to 50 cents a pound. These increases are reflected in the higher prices at which these metals are now selling.

Restrictions on Cadmium Eased

Washington — National Production Authority has eased restriction in its cadmium order to permit some metal for nonmilitary production. Defense orders for cadmium are in excess of the total available. To prevent a complete stoppage of supplies flowing into civilian production channels, NPA has ordered suppliers to fill only up to 50 per cent of orders on hand and those received through January. Supplies that remain as a result of the cutback will be distributed evenly among civilian users. By Feb. 1 a long-range allocation setup for this metal is expected.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 44.50c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.50c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 31.00-32.00c; No. 12 foundry alloy (No. 2 grade) 30.50-31.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.50-33.00c; grade 2, 30.75-31.50c; grade 3, 30.00-30.50c; grade 4, 29.50-30.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot, prompt, 146.00; Dec., 145.50; Jan. 143.00; Feb. 140.50; Mar. 139.00.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 34.00c; English, 32.75c; Belgian, 32.75c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 50.50c; 25-lb pigs, 53.15c; "XX" nickel shot, 54.15c; "F" nickel shot or ingots, for addition to cast iron, 51.00c. Prices include import duty.

Mercury: Open market, spot, small lots, New York, $118-$125, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97.99%, $2.10 per lb for 500 lb (kegs); $2.12 per lb for 100 lb (case); $2.17 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 80.00c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.93-41.68; yellow brass 36.86-38.28; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.57-51.91; phosphor-bronze grade A, 5%, 58.49-60.20.

Rods: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.26-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.83; 80%, 37.81-39.36.

Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.14-43.79; red brass, 85%, 41.45-43.05; 80%, 42.58.

Wire: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb lots 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots 29.35; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	52.0	....	....
0.156-0.188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq. ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 24.50c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.50c; over 12-in., 23.50-24.50c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 74.00c. Strip, cold-rolled, 80.00c. Rods and shapes, 70.00c. Plates, 72.00c. Seamless tubes, 103.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 58.00c. Strip cold-rolled 62.00c. Rods and shapes, 56.00c. Plates, 57.00c. Seamless tubes, 93.00c. Shot and blocks, 51.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-62.00c; 25 to 99 lb. 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. 20	24.50	16.80	17.50	147.50	19.00	32.00	50.50	80.00
Dec. 19	24.50	16.80	17.50	148.00	19.00	32.00	50.50	80.00
Dec. 18	24.50	16.80	17.50	147.00	19.00	32.00	50.50	80.00
Dec. 15-16	24.50	16.80	17.50	146.00	19.00	32.00	50.50	80.00
Dec. 14	24.50	16.80	17.50	142.00	19.00	32.00	50.50	80.00
Dec. 13	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00
Dec. 12	24.50	16.80	17.50	139.50	19.00	32.00	48.00	80.00
Dec. 11	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 8-9	24.50	16.80	17.50	141.00	19.00	32.00	48.00	80.00
Dec. 7	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 6	24.50	16.80	17.50	142.00	19.00	32.00	48.00	80.00
Dec. 5	24.50	16.80	17.50	139.50	19.00	32.00	48.00	80.00

NOTE: Copper; Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 37.69c; oval 37.19c; cast 37.375c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 61.9c, under 1000 lb 63.9c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,900 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 29.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 70.00c; 10,000 to 30,000 lb, 68.00c; 3000 to 10,000 lb, 71.00c, 500 to 3000 lb, 72.00c; 100 to 500 lb, 74.00c; under 100 lb, 77.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 35.00c; 400-lb bbl, 33.00c up to 10,000 lb, 32.50c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chrolide (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Munts metal	19.00	18.75	18.25
Nickel, silver, 10%	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; composition red brass 22.00-22.50; radiators 17.25; heavy yellow brass 17.00.

* Nominal.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

* Nominal

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.00; No. 2 18.50; light copper 17.25; No. 1 composition red brass 17.00-17.50; No. 1 composition turnings 16.50-17.00; mixed brass turnings 12.00-12.50; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 11.00; clean heavy yellow brass 14.50-15.00; new brass rod ends 16.50-17.00; auto radiators 14.50-15.00; cocks and faucets, 15.50-16.00; brass pipe 17.00-17.50.

Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 63.00-65.00; block tin pipe 90.00; No. 1 babbitt 58.00-60.00.

Aluminum: Clippings 2S 19.00-19.50; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

IRON AND STEEL SCRAP

Consumers prices, except as otherwise noted including brokers commissions, as reported to STEEL, Dec. 21, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Dec. 21	$45.50
Dec. 14	45.50
Nov. 1950	41.33
Dec. 1949	28.03
Dec. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$46.50
No. 2 Heavy Melt.	44.50
No. 1 Busheling	46.50
No. 1 Bundles	46.50
No. 2 Bundles	43.50
Heavy Turnings	47.00-48.00
Machine Shop Turnings	38.50
Mixed Borings, Turnings	38.50
Short Shovel Turnings.	40.50
Cast Iron Borings	39.50-40.50
Low Phos. Steel	56.00-57.00

Cast Iron Grades

No. 1 Cupola Cast	57.00-58.00
No. 1 Machinery Cast.	67.00-68.00
Charging Box Cast	55.00-56.00
Heavy Breakable Cast.	54.00-55.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.50
Rails, Random Lengths	64.00-65.00
Rails, 2 ft and under.	68.00-69.00
Rails, 18 in. and under	69.00-70.00
Railroad Specialties	64.00-65.00
Railroad Specialties	*64.00-65.00*

CLEVELAND

(Delivered Consuming Plant)

No. 1 Heavy Melt. Steel	$45.50-46.00†
No. 2 Heavy Melt. Steel	43.50-44.00†
No. 1 Busheling	45.50-46.00†
No. 1 Bundles	45.50-46.00†
No. 2 Bundles	40.00-42.00
Machine Shop Turnings	37.50-38.00
Mixed Borings, Turnings	39.00-40.00
Short Shovel Turnings.	39.00-40.00
Cast Iron Borings	39.50-40.00
Low Phos.	48.00-48.50

Cast Iron Grades

No. 1 Cupola	65.00-66.00
Charging Box Cast	53.00-54.00
Stove Plate	55.00-56.00
Heavy Breakable Cast.	55.00-56.00
Unstripped Motor Blocks	44.00-45.00
Brake Shoes	50.00-51.00
Clean Auto Cast	65.00-66.00
Burnt Cast	46.00-47.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50
R.R. Malleable	72.00-73.00
Rails, 3 ft and under.	70.00-71.00
Rails, 18 in. and under	71.00-72.00
Rails, Random Lengths	64.00-65.00
Cast Steel	58.00-59.00
Railroad Specialties	60.00-61.00
Uncut Tires	60.00-61.00
Angles, Splice Bars	65.00-66.00

† Plus applicable springboards

VALLEY

No. 1 Heavy Melt. Steel	$46.00-46.50†
No. 2 Heavy Melt. Steel	44.00-44.50†
No. 1 Bundles	46.00-46.50†
Facty. Prod. Bundles.	46.00-46.50†
No. 2 Bundles	40.50-42.50
Machine Shop Turnings	38.00-38.50
Short Shovel Turnings.	40.00-40.50
Cast Iron Borings	40.00-40.50
Low Phos.	48.50-49.00

† Plus applicable springboards

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-46.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$45.00
No. 2 Heavy Melt. Steel	43.00
No. 1 Busheling	43.00
No. 1 Bundles	45.00
No. 2 Bundles	42.00
Short Shovel Turnings.	39.00
Machine Shop Turnings	37.00
Mixed Borings, Turnings	37.00
Low Phos. Punchings and Plate, elec. fur. grade	*51.00*
Low Phos. Plate, 5 ft & Under	*51.00*
Elec. Furnace Bundles.	48.00-49.00
Heavy Turnings	45.00
No. 1 Chemical Borings	45.00
Knuckles and couplers.	56.00-58.00
Steel car wheels	56.00-58.00

Cast Iron Grades

No. 1 Cupola Cast	*54.00-55.00*
No. 1 Machinery Cast.	58.00-60.00
No. 1 Yard Cast	*52.00-53.00*
Charging Box Cast	54.00-55.00
Heavy Breakable Cast.	54.00-55.00
No. 1 Wheels	70.00*
Malleable	74.00

* Nominal

CINCINNATI

No. 1 Heavy Melt. Steel	*$46.00*
No. 2 Heavy Melt. Steel	*44.00*
No. 1 Busheling	*46.00*
No. 1 Bundles	*46.00*
No. 1 Black Bundles	*46.00*
Machine Shop Turnings	*38.00*
Short Shovel Turnings	*40.00*
Mixed Borings, Turnings	*38.00*
Cast Iron Borings	34.00

Cast Iron Grades

No. 1 Cupola Cast	70.00
Charging Box Cast	60.00
Stove Plate	55.00
Heavy Breakable Cast.	56.00
Unstripped Motor Blocks	42.00
Brake Shoes	37.00
Clean Auto Cast	70.00
Drop Broken Cast	72.50
Low Phos., 18 in. and under	62.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.00*
R.R. Malleable	64.00
Rails, Rerolling	65.00
Rails, Random Lengths	65.00
Rails, 18 in. and under	72.50

DETROIT

(Brokers' buying prices,* f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$38.25-39.00
No. 1 Bundles	40.25-47.00
No. 2 Bundles	37.25-39.00
No. 1 Busheling	40.25-47.00
Machine Shop Turnings	32.25-33.00
Forge Flashings	40.25-47.00
Short Shovel Turnings.	34.25-35.00
Cast Iron Borings	34.00-35.00
Punchings & Plate Scrap	42.75-47.00

Cast Iron Grades

No. 1 Cupola Cast	59.00-61.00
Heavy Breakable Cast.	48.00-51.50
Clean Auto Cast	62.00-64.00

* All prices nominal.

BUFFALO

No. 1 Heavy Melt. Steel	$44.50-45.25
No. 2 Heavy Melt. Steel	42.50-43.25
No. 1 Busheling	42.50-43.25
No. 1 Bundles	43.50-44.25
No. 2 Bundles	41.50-42.25
Machine Shop Turnings	36.50-37.25
Mixed Borings, Turnings	36.50-37.25
Cast Iron Borings	36.50-37.25
Short Shovelings	38.50-39.25
Low Phos.	48.25-49.00

Cast Iron Grades

No. 1 Cupola	52.00-53.00
No. 1 Machinery	55.00-56.00
Malleable	60.00-61.00

Railroad Scrap

Rails, 2 ft and under.	60.00-61.00
Rails, random size	55.00-56.00
Railroad Specialties	55.00-56.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$39.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	38.00-39.00
No. 1 Bundles	39.00
No. 2 Bundles	36.00
Mixed Borings, Turnings	31.00
Machine Shop Turnings	31.00
Short Shovel Turnings.	33.00
Punchings & Plate Scrap	41.50
Low Phos. Plate, 5 ft & under	41.50
Elec. Furnace Bundles.	41.50

Cast Iron Grades

No. 1 Cupola Cast	*47.00-48.00*
No. 1 Machinery	49.00-50.00
Charging Box Cast	44.00-45.00
Heavy Breakable	44.00-45.00
Unstripped Motor Blocks	41.00-42.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$35.67*
No. 2 Heavy Melt. Steel	*33.67*
No. 1 Bundles	*35.67*
No. 1 Busheling	*33.67*
Machine Shop Turnings.	*27.67*
Mixed Borings, Turnings	*27.67*
Short Shovel Turnings.	29.50-30.00
Bar Crops and Plate.	44.50-45.00
Punchings & Plate Scrap	44.50-45.00
Chemical Borings	31.00-32.00

Cast Iron Grades

No. 1 Cupola Cast	*44.00-46.00*
Mixed Cast	*42.00-43.00*
Heavy Breakable Cast.	*41.00-42.00*
Stove Plate	*42.00-43.00*

CHICAGO

No. 1 Heavy Melt. Steel	$45.00
No. 2 Heavy Melt. Steel	43.00
No. 1 Bundles	45.00
No. 2 Bundles	42.00
Machine Shop Turnings	37.00
Mixed Borings, Turnings	37.00
Short Shovel Turnings.	39.00
Cast Iron Borings	37.00
Low Phos.	52.00-54.00
Elec. Furnace Bundles.	46.00-48.00
Heavy Turnings	41.00-42.00
Cut Structurals	50.00-51.00

Cast Iron Grades

No. 1 Cupola Cast	62.00-64.00
Clean Auto Cast	*66.00-67.00*
No. 1 Wheels	57.00-58.00
Stove Plate	49.00-50.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00*
Malleable	73.00-75.00
Rails, Rerolling	66.00-68.00*
Rails, Random Lengths	59.00-60.00
Rails, 2 ft. and under	*68.00-69.00*
Rails, 18 in. and under	*69.00-70.00*
Railroad Specialties	60.00-61.00*
Angles, Splice Bars	*64.00-65.00*

* Brokers' buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$43.50*
No. 2 Heavy Melt. Steel	*41.50*
No. 1 Busheling	*43.50*
No. 2 Bundles	*40.50*
Machine Shop Turnings.	*35.50*
Mixed Borings, Turnings	*35.50*
Short Shovel Turnings.	*37.50*
Cast Iron Borings	28.00
Bar Crops and Plate.	46.00-47.00
Cut Structurals	46.00-47.00

Cast Iron Grades

No. 1 Cupola Cast.	59.00-60.00
Stove Plate	59.00-60.00
No. 1 Wheels	nominal

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.50*
R.R. Malleable	nominal
Rails, Rerolling	60.00-61.00
Rails, 2 ft and under.	65.00-66.00
Angles and Splice Bars.	59.00-60.00

ST. LOUIS

No. 1 Heavy Melt. Steel	*$47.00-48.00*
No. 2 Heavy Melt. Steel	*41.50-42.50*
No. 1 Bundles	*46.00-47.00*
No. 2 Bundles	*41.50-42.50*
Machine Shop Turnings.	*33.00-34.00*
Short Shovel Turnings.	*35.00-37.00*

Cast Iron Grades

No. 1 Cupola Cast	*64.00-66.00*
Charging Box Cast	*58.00-60.00*
Heavy Breakable Cast.	*59.00-61.00*
Brake Shoes	*56.00-58.00*
Clean Auto Cast	*65.00-67.00*
Burnt Cast	*57.00-58.00*

Railroad Scrap

R.R. Malleable	*74.00-76.00*
Rails, Rerolling	*66.00-68.00*
Rails, Random Lengths	*59.00-61.00*
Rails, 2 ft and under	*65.00-67.00*
Uncut Tires	*56.00-57.00*
Angles, Splice Bars	*66.00-68.00*
Railroad Specialties	*58.00-60.00*

* F.o.b. tracks

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	30.00
No. 2 Bundles	28.00
No. 3 Bundles	25.00
Machine Shop Turnings	16.00
Low Phos. Electric	45.00

Cast Iron Grades

No. 1 Cupola Cast	46.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	30.00
Rails, Random Lengths	30.00

SEATTLE

No. 1 Heavy Melt. Steel	$28.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Busheling	25.50-26.00
Nos. 1 & 2 Bundles	25.50-26.00
No. 3 Bundles	22.00
Machine Shop Turnings	20.00
Mixed Borings, Turnings	20.00
Punchings & Plate Scrap	*40.00-44.00*
Cut Structurals	*40.00-44.00*

Cast Iron Grades

No. 1 Cupola Cast	*42.00-44.00*
Heavy Breakable Cast	*38.00-40.00*
Stove Plate	*36.00-38.00*
Unstripped Motor Blocks	33.00-35.00
Malleable	33.00-35.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	29.00
Railroad Malleable	35.00
Rails, Random Lengths	29.00-30.00
Angles and Splice Bars	29.00-30.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$30.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Bundles	28.00
No. 2 Bundles	26.00
No. 3 Bundles	22.50
Machine Shop Turnings	16.00
Punchings & Plate Scrap	39.00

Cast Iron Grades

No. 1 Cupola Cast.	43.00-48.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	nominal
Rails, Rerolling	45.00

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap.	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings.	23.00

Cast Iron Grades*

No. 1 Machinery Cast.	45.00

* F.o.b. shipping point.

Sheets, Strip . . .

Sheet and Strip Prices, Page 85 & 86

Cleveland—Raising of the minimum limits on sheet steel production from 5 per cent to 10 per cent which the mills must set aside for DO account is cutting further into allotments for the regular trade.

February consumer quotas are down from December, the last full quota month and all the signs point to continued shrinkage. Diversion of some continuous mill capacity to production of plates over coming weeks will necessitate additional cuts in light, flat-rolled quotas.

Belief is expressed in the trade that steel distribution will be placed under the Controlled Materials Plan, or something similar, much sooner than had seemed likely no longer than two weeks ago.

Cincinnati — February sheet mill schedules show decided cuts in allotments for civilian needs because of the growing tonnage for priority programs. Production is at capacity except for one mill where pig iron supply is a problem.

Chicago—It is anticipated present efforts of NPA to increase plate production will curtail output of sheets since the lighter plates will be rolled on sheet mills. Manufacturers of household appliances are pushing production to the limit of steel supply, anticipating early government limitation orders. Unable to obtain adequate supply of steel from mill sources consumers are resorting to premium material as fully as supply of such permits.

Boston—Producers of light, flat-rolled products are booked into April and May on directly-rated orders and essential program tonnage. Civilian allotments are restricted to February. Revision in allocation and distribution of considerable second quarter preferential volume is likely in event some form of the Controlled Material Plan is put into effect. Changes will be in form rather than loss of steel placed under current distribution policy. Some sellers expect March tonnage to be the last scheduled along present lines. Meanwhile, pressure for unrated flat-rolled steel is heavy with mill openings narrowing as more armament contracts are placed in addition to earmarked allocations.

New York—Although there is considerable speculation as to how soon steel distribution will be put on a CMP basis, sheet sellers have little to do meanwhile but to go ahead accepting DO priorities in the order they are received and to follow them up with allocations on programmed work before attempting to supply general commercial needs. Some have only recently opened books for February, with non-rated consumers receiving a steadily shrinking amount.

Change in the minimum quota limits on hot and cold rolled sheets from 5 per cent to 10 per cent, where DO orders are involved, has tended to further restrict the volume of "free" tonnage available. In the case of shipments from some mills this won't make too much difference because these sellers had already been accepting DO rated tonnage in a volume surpassing the 5 per cent minimum quota.

Alloy sheets, especially where nickel is involved, are almost impossible to obtain without a rating. Only the straight chromes can be had and not even then in the amounts possible a few weeks ago.

Philadelphia—Nonrated sheet tonnage in February will be reduced about 30 per cent from the January quota in the experience of one large producer. Prospects point to still further shrinkage in March. Alloy sheets, except for some of the straight chrome grades, are moving largely on DO ratings.

Semifinished Steel . .

Semifinished Prices, Page 85

Pittsburgh—Some sellers have increased size extras on forging billets an average of about $6 per ton, and increased chemistry extras applicable to resulphurized grades. Tight supply situation throughout entire list of semifinished steel products is expected to prevail throughout first half at least. An increasing volume of tonnage from forging customers is seen developing for direct military programs. Nonintegrated wire interests are operating well below capacity due to scarcity of wire rods.

Steel Bars . . .

Bar Prices, Page 85

Boston—Hot-rolled bar allocations are down for February, being reduced in part to consumers by fixed allotments to nonintegrated producers of cold-finished bars. Inroads on carryovers are not up to expectations in most bar products and January-February schedules will reflect this situation, coupled with increasing armament requirements. Already confronted with steel shortages, more bar consumers are seeking work in defense categories. Forge shops are going stronger in this direction.

New York—While pre-holiday influences effected inquiry last week to some extent, and will probably have some bearing on activity over the remainder of the year, they were less pronounced than at any time since World War II. Mills are booked up through February, and in a few instances bookings extend through March. There is little doubt, however, that schedules will be revamped during the latter weeks of first quarter where schedules have already been set up. Non-rated buyers have benefited to some extent by the reduction in minimum DO quotas on hot carbon bars to 5 per cent from 10. Nevertheless this advantage may be only temporary.

Pittsburgh—Sellers contend direct military tonnage of coldfinished bars continues relatively light, although gradually increasing. A 20 mm shell order involving around 4000 tons is pending. Some producers have had little difficulty in filling January production schedules with rated orders up to the 10 per cent maximum set by NPA. However, this situation was not the case among all producers. On the theory the maximum percentage of 10 per cent was originally set too high, NPA recently reduced it to 5 per cent. Large rounds specifications appear to dominate rated tonnage specifications to date.

Cleveland—Merchant bar tonnage is limited for regular trade but supply conditions appear slightly less acute than a few weeks ago. At any rate, pressure on the mills is not quite as insistent as it was, possibly because of the approach of the holiday season and yearend inventory taking. Granting of priority treatment to nonintegrated steel mills is expected to ease procurement problems of the cold-finished barmakers with respect to hot bar tonnage. In general, however, forward bookings of the mills are likely to undergo some revamping during next quarter as defense and related requirements increase.

Chicago — Agricultural implement makers whose operations have been seriously affected by strikes in recent months are now finding production restricted by the steel shortage. They are acquiring premium steel where possible, passing the increased cost on to customers.

Seattle—Rolling mills continue capacity operations. Backlogs are being gradually reduced but demand, particularly in small tonnages is insistent. Holiday shutdowns will be brief. Northwest Steel Rolling Mills, Inc., Seattle, will close for ten days for overhaul and the holidays, but electric furnaces will remain active.

Export Steel Price List

New York—A correction is made in the recent steel export price schedule announced by the United States Steel Export Co. (issue Dec. 11, page 148), as follows:

Manten

	Per 100 Lb
Plates	$5.27
Standard Structural Shapes	5.12
C. B. Sections	5.17
H. R. Bars, Bar Shapes	5.02
H. R. Sheets	5.20

Abrasion Resisting

Plates	5.37
H. R. Bars	5.37
H. R. Sheets	5.50

Plates . . .

Plate Prices, Page 85

Philadelphia — One eastern plate mill has filled up its schedules for first quarter but others, except on rated work, have not accepted business for delivery beyond February. Continued shrinkage in commercial tonnage throughout the period is indicated.

Following establishment of a program for allocating 8000 tons of steel monthly to Canadian carbuilders, an allotment program for diesel locomotive builders is under consideration, and another far more extensive program is pending for the petroleum industry. Whether the latter industry's request for 1 million tons of steel per month will be granted is regarded as questionable.

Boston—Plate fabricating shops lag in acquiring rated volume due to lack of defense sub-contracts, notably from shipyards. Most of them are experiencing reductions in non-rated monthly plate allocations, 35 to 45 per cent lower in some instances. Demand for commercial work holds well but shops are hampered by low steel inventories. Pressed head deliveries are more extended. Shortages of heavy gage hot-rolled sheets is adversely affecting head deliveries.

Seattle—Plate shops are struggling

against an acute shortage of steel and expect no relief unless they can book defense orders. Several sizable projects are pending, including jobs at Richland and in Alaska for military installations. Seattle has awarded 2000 tons of penstock liner plates for Ross dam to Consolidated Western Steel Corp.

Wire . . .

Wire Prices, Page 87

Boston—Non-rated allocations for February approximate January volume on numerous wire products, but rated orders are increasing and in alloys are narrowing mill openings. On some wire items DO orders are booked through mid-second quarter. Instances are frequent where civilian orders simultaneously placed can be shipped ahead of rated tonnage.

Pressure is building up among users with extended rated orders for readjustments, making it possible for them to obtain steel earlier than currently scheduled. It is claimed wire will be needed to meet armament requirements before April or May.

Screw manufacturers are drawing little wire, buying finished drawn stock instead.

Tin Plate . . .

Tin Plate Prices, Page 86

Pittsburgh—A substantial change in tin plate producers' product mix is indicated throughout first quarter and probably the remainder of 1951 as result of governmental restrictions on use of pig tin. The tin conservation order is expected to limit pig tin consumption by tin plate producers during February and March of next year to no more than 80 per cent of the first half 1950 monthly average. In addition to significant revisions in coating weights, emphasis also is expected to be directed to greater production of black plate tonnage.

Some easing in tin plate supply situation may develop later in the year as electrolytic lines now under construction are brought into service.

Output of tin mill products next year will be influenced by amount of steel available for tin plate. Production of light plates on the large continuous strip mills is one factor in this connection.

In addition to the tin conservation order another regulation governing end uses of tin plate is expected to be announced.

Recent price announcements by some producers indicate they are applicable to those in effect at time of shipment in contrast to full year 1951 as is the case with U. S. Steel's subsidiaries.

San Francisco—Tin plate prices will advance Jan. 1, as previously announced, and along with this increase will go the price of tin cans. Canmakers report a rush of inquiries on order placing to "beat the deadline", but they are unable to accept bookings beyond normal requirements. Columbia Steel Co., subsidiary of United States Steel Corp., only tin plate producer in this area, is turning out 4 million base boxes annually.

Structural Shapes . . .

Structural Shape Prices, Page 85

New York—Structural steel inquiry is spotty. There are still various housing projects, government financed in most cases, and some power house work. However, there is little in the way of offices and commercial construction as distinguished from industrial work. Bridge work is off to some extent, especially now that contracts for the New Jersey Turnpike have been largely placed, but this lag is expected to be taken up with an increasing amount of New York state throughway construction. Shapes are in tight supply and most fabricators are booked months ahead on the basis of what they might reasonably expect in the way of shipments of plain material. Actually, few if any, are able to operate at normal capacity because of the stringency in shapes, and to a lesser degree, in universal plates. One large district fabricator is quoting 13 to 14 months delivery.

Boston—Contracts for fabricated structural steel are being accepted subject to changes in priority regulations. Prices are higher and deliveries of bar shapes and angles are more extended, affecting design work in some cases. Up to 15 months is quoted on deliveries for bridge work. Except for expansions directly tied to the armament production requirements, including power plants, private construction inquiry is less active.

Philadelphia — While structural steel demand is tapering, especially as it applies to light commercial work, fabricators still have all the tonnage they care to figure in view of their extended delivery positions.

Seattle—Demand for structurals is strong. Several large contracts pending include 16,400 tons galvanized transmission towers for Bonneville Power Administration, bids in Dec. 22.

Pig Iron . . .

Pig Iron Prices, Page 84

Chicago—Although demand for pig iron exceeds supply and sellers are allocating tonnage to customers no instances are known where foundries have been forced to suspend operations. High prices for foundry scrap and scarcity force melters to seek increased iron supply. Of the district's 42 blast furnaces 39 are operating.

Cincinnati—Shipments of merchant iron are holding close to announced allotments while melters continue to seek additonal tonnage. Priority tonnage continues in small proportion to total.

Cleveland—Pressure for merchant iron grows apace with the stepup in foundry activity. Accumulation of inventories is virtually impossible with sellers alloting tonnage to customers as equitably as possible. So far no plant shutdowns have been occassioned by iron shortage but some shops are increasing the scrap in their melts despite the high cost. Expectations are the pig iron shortage will increase as defense requirements mount. Diversion of some blast furnace capacity from foundry iron to basic is feared in some market circles. Blast furnaces in this immediate district are operating at full capacity, Republic Steel Corp. having returned its one idle stack to blast early this month after a two-month suspension for repairs.

Pittsburgh—Foundries serving the railroad and radiation industries have registered the most improvement in production schedules since early this year. While a high level of activity is indicated for railroad castings demand throughout 1951, marked reversal in new order volume is expected by the radiation group due to restrictions on new home construction. Most foundry interests contend pig iron supply is scarcest of basic raw materials and this situation is expected to become a greater problem over coming months as sellers assume increased tonnage obligations for "preferred" end uses.

Boston — Inquiry for outside pig iron is heavier as the district furnace is confronted with lack of balance in ore. Outside furnaces are hard pressed and are able to furnish limited tonnages only. Foundry melt is increasing but iron supply is not yet critical, although more shops are inclined to improve their inventory position. The machine tool industry is placing more orders for castings.

In announcing an increase of $1 per ton on foundry pig iron for first quarter, Mystic Iron Works says the increase does not reflect substantially higher costs of ores recently bought, but is reached by a method of determining costs outlined in a partnership agreement with about 200 New England foundries. The Everett furnace now quotes No. 2 foundry $53.25 and malleable $53.75.

New York—While there is a shortage of pig iron, most district consumers have been able to sustain operations by more liberal consumption of scrap. Foreign iron is helping out although many foundries regret they hadn't anticipated the iron shortage further by placing heavier tonnages with importers. Most of the smaller foundries, actually, had not bought any foreign iron and are now finding it difficult to get tonnage from abroad for delivery before February. Certain large importers claim they are booked up for practically the entire first half. Oven coke is also increasingly scarce.

Philadelphia—Chilean pig iron is being offered around $67 c.i.f. duty paid for delivery in January. Possibly 5000 to 10,000 tons per month will be available. Meanwhile, tonnage from Europe is more difficult to obtain.

Seattle—Little domestic pig iron is available in the local market. Foreign material is enroute or committed for this area. Rising ocean freight rates are increasing delivered costs.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 85

Chicago — Reinforcing steel suppliers, swamped with inquiries, are turning away business. Supply is so limited it is believed many projects will fall by the wayside. Some suppliers are committed many months ahead on the basis of present steel quotas.

Coal Chemicals . . .

Coal Chemical Prices, Page 88

Pittsburgh—U. S. Steel Corp. advanced sulphate of ammonia prices $8 per ton, effective Dec. 7, at various producing points. Also one degree toluol went up 5 cents per gallon and industrial xylol 4 cents. Jones & Laughlin Steel Corp. increased toluol and industrial xylol by like amounts, but has not yet moved prices upward on sulphate of ammonia.

Scrap . . .

Scrap Prices, Page 92

Boston—Despite price rollback talk, demand for steelworks scrap is active at the formula level. Prices on cast iron grades are strong. Tonnage movement is steady. Some cast buying is to care for the heavier ratio of scrap in melts due to tight pig iron supply conditions.

New York—Brokers' buying prices are unchanged on all grades except No. 1 cupola cast which is up $2 to $47-$48 f.o.b. shipping point. While there will be some letup in steel mill operations over the Christmas holidays, demand for mill steel continues highly active.

Philadelphia—Strong pressure for scrap continues, formula prices holding on the major open-hearth grades. Low phos punchings and plate scrap, electric furnace grade, and low phos plate, 5 ft. and under, are higher at $51, delivered. No. 1 cupola cast is higher at $54-$55 and No. 1 yard cast at $52-$53.

San Francisco—Scrap prices are steady at the higher level. The increased prices, dealers hope, will uncover new supplies in outlying areas. Recent advances amounted to $1 a ton on No. 1 cupola cast to $5.50 a ton on No. 2 and No. 3 bundles.

Seattle—Buyers are trying to hold No. 1 and No. 2 heavy melting at $28 but good scrap has brought higher prices. The situation is acute as receipts are barely keeping pace with consumption and domestic sources of supply seem to have dried up. Winter weather also is handicapping collection.

No further foreign cargoes are reported enroute, the freight rate for charters from Europe having risen from $5 to $12 a ton, due to the war situation.

Dealers expect prompt government action on controls and embargoes, in order to keep mills supplied.

Cast scrap is firm, 12 cars of No. 1 cupola cast being purchased last week at $42.50-$44. Electric furnace scrap is up to $44, breakable to $40 and stove plate to $38. Foundry operations are well above normal.

Cincinnati—Scrap prices are unchanged as market interests take a watchful-waiting attitute until national emergency moves are clarified. Considerable tonnage is moving without recourse to long hauls.

Chicago—The revised prieing formula on steelmaking grades of scrap has done much to stabilize the market here insofar as large consumers are concerned. Injected into the situation now is the view price freezing is not far away. If the pattern in the last war is any guide freezing likely will be accompanied by a rollback. The

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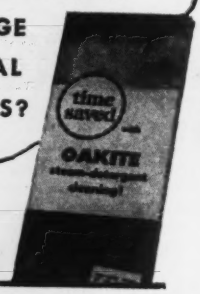

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scrap conference held in Washington last week supports this thinking. Demand for foundry scrap is strong in face of limited supply.

Cleveland — Interests in the scrap trade here are more convinced than ever that the peak has been reached in prices and that the market may ease slightly after the first of the year. Dealers and brokers are awaiting action by the mills now that the government has set forth its voluntary price control program. Movement of scrap is freer since the incentive to hold tonnages speculatively has been eliminated by developments in Washington. While supplies remain tight, no serious shortages have developed in this area.

Pittsburgh—Higher formula prices on blast furnace and steelmaking scrap grades have released considerable tonnages from dealers' yards.

Basing point price relationships prevent bringing in unprepared heavy melting steel from remote points for sale at a profit it is contended here. Crushers face a similar problem.

The situation has been alleviated to some extent by the willingness of some mills to pay freight on remote material.

Outcome of conversations in Washington last week among leaders in the iron and steel scrap and nonferrous scrap metal industries had not been divulged at press time. Trade does not believe price controls are in the immediate offing. No significant price changes were noted last week.

St. Louis—Scrap market was at a standstill last week as dealers and consumers awaited control developments. Price trend was up, however, with No. 1 cupola cast quoted $4 higher and railroad malleable $10. Recent gyrating cast and rail scrap prices have increased sentiment for and expectations of a roll-back in those items. Mill and foundry stocks are dropping.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 88

Boston—Foundry coke prices have advanced 50 cents per ton to $24.80, delivered New England consumer. Metallurgical coke oven foundry, Everett, Mass. ovens, for New England delivery within the $4.15 freight zone, is $24.80.

Pittsburgh—Oven foundry coke is expected to remain in short supply throughout first quarter. Supply of oven furnace coke is considered one of the major bottlenecks in meeting raw material requirements under the steel industry's proposed expansion program. Shortages of oven foundry coke has strengthened demand for the beehive foundry grades, with result prices have advanced 50 cents in recent weeks.

Cleveland — Oven foundry coke prices have been advanced 75 cents to $1 per ton. Painesville, O., price is $24, up 75 cents, while the Erie oven is quoting $23.50, increase of $1.

Demand for oven coke is in excess of producers' ability to fully meet. Foundries are encountering increasing difficulties in obtaining supplies as an increasing proportion of oven capacity is being diverted to production of furnace coke.

Less foundry coke is being shipped into this area from outside districts than earlier this year. This is believed due to diversion of capacity to production of blast furnace grade. As a result local foundries are turning to the less desirable beehive furnace coke for supply relief.

Imported coke is being considered by some buyers. In fact, an unconfirmed report circulated in the local market last week to the effect a cargo of English oven coke was on the way for unloading at Cleveland.

Warehouse . . .

Warehouse Prices, Page 89

Pittsburgh — Steel supply outlook for warehouses is not too promising for there is growing prospect mills will have to set aside more than the percentage rated tonnage maximums as established by NPA. One major producer expects nearly 35 per cent of its finished steel output will represent rated tonnage by close of first quarter. Distributors' inventories are at least 10 per cent below the level of last spring. All warehouses have adjusted prices upward $9 to $15 per ton to offset higher wage and steel costs, hoping to maintain at least a portion of the price spread over mill quotations previously revised upward throughout the industry.

Boston—Allocations to distributors will afford slight relief in first quarter to warehouses with depleted inventories. Starting in February allotments will be smaller for the base period after directly rated volume is covered. This is notably true of tool and die steels. Demand for these grades has increased with numerous warehouses, and most have limited allotments due to limited purchasing early this year. A more realistic allotment program to warehouses is expected in second quarter to permit distributors to meet small-lot rated demands.

Cleveland—With the approach of holidays demand pressure on the warehouses is slackening. Plant curtailments over the Christmas season, coupled with impending inventory-taking and uncertainty for the future, combine to slow down demand generally. Seasonal letdown in building requirements is reported. Inventory position of the warehouses continues to deteriorate. Distributors' allotments will not be as large in first quarter as had been anticipated despite the fact the warehouses are favored with preferential rating on mill books. It appears NPA's order M-6 is not working out as well as had been hoped. Distributors now are looking for supply relief to early imposition of the Controlled Materials Plan, or something similar, in the distribution of steel.

Cincinnati—Warehouse sales show a slip-off from recent months due to smaller stocks. Meanwhile the demand is at a peak.

Seattle—Inventories are low and replacement prospects not promising. Warehousemen are making every effort to spread available supplies among regular customers. Higher price schedules are in line with mill increases.

Tubular Goods . . .

Tubular Goods, Prices Page 88

Seattle—Little interest in cast iron pipe is evident, agencies handicapped by slow deliveries and increasing competition from other types.

Iron Ore . . .

Iron Ore Prices, Page 89

Cleveland—Shipments of Lake Superior iron ore for the 1950 season were 78,205,681 tons, increase of 8,649,412 tons from the 1949 total of 69,556,269 tons, but about 1.8 million tons below the industry's goal. The December movement came to 872,638 tons, increase of 701,918 tons from a year ago.

The cumulative totals for the season are reported by the Lake Superior Iron Ore Association as follows:

U. S. Ports	1950	1949
Escanaba	5,007,221	3,816,109
Marquette	4,085,570	3,903,219
Ashland	4,889,937	4,263,314
Superior	26,425,111	25,298,709
Duluth	18,768,161	15,751,829
Two Harbors	17,089,983	14,763,497
Total	76,265,983	67,796,677
Canadian Ports		
Michipicoten	724,539	627,615
Port Arthur	1,215,159	1,131,977
Total	1,939,698	1,759,592
Grand Total	78,205,681	69,556,269
Increase from year ago	8,649,412	

Monthly Totals, 1950*

Apr.	348,904	Sept.	12,190,669
May	9,496,448	Oct.	11,380,271
June	11,737,951	Nov.	6,993,233
July	12,703,591	Dec.	872,638
Aug.	12,482,069		

* Before revisions.

Yearly Totals

1948	82,937,192	1944	81,170,538
1947	77,898,087	1943	84,404,852
1946	59,356,716	1942	92,076,781
1945	75,714,750	1941	80,116,360

Canada . . .

Toronto, Ont.—Production of primary iron and steel in Canada in September, amounted to 367,515 net tons compared with 365,125 in August and 280,857 in September, 1949.

Shipments for sale in September amounted to 254,682 net tons of which 244,279 tons were carbon and 10,403 alloy steel shapes. For August shipments amounted to 211,669 tons of carbon and 10,326 tons of alloy steel shapes, and for September, 1949, 214,881 tons of carbon and 8458 tons of alloy shapes.

Of amounts shipped in September, 42,862 tons went direct to railways and railway car shops; 16,180 tons to pressing, forming and stamping plants; 29,455 tons to merchant trade products; 32,659 tons to building construction; 27,243 tons to the containers industry; 12,758 tons to agricultural equipment; 18,391 tons to the automotive industry; 12,335 tons to machinery plants; 1096 tons to shipbuilding; 8977 tons to mining, lumbering, etc., and 1256 tons to miscellaneous industries, while wholesalers and warehousing accounted for 29,537 tons and exports 20,785 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3800 tons, galvanized transmission towers for Bonneville Power Administration, to Bethlehem Pacific Coast Steel Corp., Seattle, low, $978,849.

2000 tons, Alaska military warehouses, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., general contractor.

635 tons, gymnasium armory, Rhode Island State College, Kingston, R. I., to American Bridge Co., Pittsburgh; E. Turgeon Construction Co., Providence, R. I., general contractor.

500 tons, service building, Prang Co., Green Bay, Wis., to North East Boiler & Welding Co.

500 tons, assembly plant addition, Ford Motor Co., Somerville, Mass., to Fort Pitt Bridge Works, Pittsburgh.

465 tons, library addition, Providence, R. I., to American Bridge Co., Pittsburgh; E. Turgeon Construction Co., Providence, general contractor.

350 tons, power house, Long Island Lighting Co., Glenwood Landing, N. Y., to Harris Structural Steel Co., New York.

325 tons, gymnasium, Andover Academy, Andover, Mass., to American Bridge Co., Pittsburgh; E. J. Rappoli Co., Boston, general contractor.

260 tons, warehouse, Specialty Engineering Co., Philadelphia, to Belmont Iron Works, Eddystone, Pa.

200 tons, Chief Joseph dam spillway, to Pacific Car & Foundry Co., Seattle; Chief Joseph Builders, general contractor.

163 tons, unstated project at Richland, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Peter Kiewit Sons Co., general contractor.

160 tons, Du Pont plant addition, Gibbstown, N. J., to Belmont Iron Works, Eddystone, Pa.

145 tons, bridge for Pennsylvania Railroad over 59th street, Chicago, to American Bridge Co., Pittsburgh.

STRUCTURAL STEEL PENDING

16,400 tons, galvanized transmission towers; bids in to Bonneville Power Administration, Portland, Oreg., Dec. 22.

2200 tons, cantilever bridge over Columbia river, Wasco county, Oregon; bids to Judge W. R. Webber, The Dalles, Jan. 4; plans by Tudor Engineering Co., San Francisco.

2000 tons, diesel engine shop, Argentine, Kans., for Santa Fe System Lines; bids Dec. 26.

1737 tons, bridge, North Omaha, Nebr., for North Omaha Bridge Commission; bids Dec. 18.

1140 tons, Corwith freight house, Chicago, for Santa Fe System Lines; bids Dec. 20.

1050 tons, boiler house and incinerator, National Institute of Health, Bethesda, Md.; John McShain, Philadelphia, low on general contract.

1000 tons, Lincoln Tunnel approaches, connecting with the New Jersey Turnpike and the New Jersey state highway No. 3, Port of New York Authority, New York; bids closed Dec. 19.

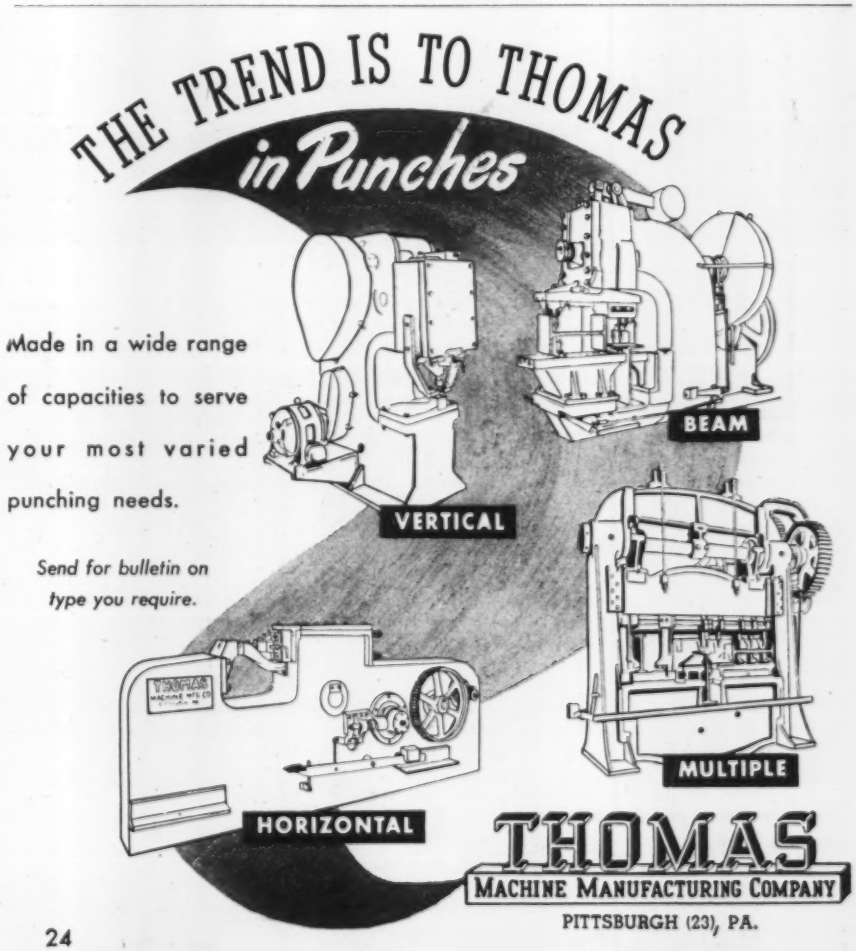
500 tons or more, sluice gates, hoists, frames, etc., Chief Joseph dam, Columbia river; Willamette Iron & Steel Co., Portland, Oreg., low to U. S. Engineer, $331,788.

500 tons, Valley Stream Memorial High School, Valley Stream, N. Y.; bids closed Dec. 19.

350 tons, including bars, plates, etc.; bids to Bonneville Power Administration, Portland, Oreg., Dec. 22.

275 tons, Racine Avenue pumping station, Extension L, Chicago; bids in.

253 tons, bridge F-06-1(24), Waukesha county, Wisconsin; bids Dec. 19.



250 tons, addition, Roosevelt Hospital, Ninth avenue, New York; bids asked.

138 tons, bridge, Sec. 141-B, Iroquois county, Illinois; bids in.

135 tons, bridge 6532, Wabasha county, Minnesota.; bids Dec. 15.

117 tons, bridge 6734, Norman county, Minnesota; bids Dec. 15.

114 tons, bridge 6757, Brown county, Minnesota; bids Dec. 15.

110 tons, bridge S-0544(1), Marinette county, Wisconsin; bids Dec. 19.

Unstated, spillway bridge, Canyon Ferry dam, Montana; bids to Bureau of Reclamation, Denver, Dec. 28.

Unstated, 116 x 228 foot steel frame bottling plant, Spokane, Wash.; bids to Sig Ivarsson, Seattle engineer, Dec. 21.

Unstated, seven 70-foot girder spans for Alaska Railroad; Sealand Construction Co., Seattle, low $287,000; materials furnished by government.

REINFORCING BARS . . .

REINFORCING BARS PLACED

2500 tons, Chief Joseph dam, to Northwest Steel Rolling Mills Inc., Seattle; Chief Joseph Builders, general contractors.

980 tons, Down Town Auto Park Inc., Minneapolis, to Bethlehem Steel Co.; H. N. Leighton Co., Minneapolis, general contractor.

712 tons, Chicago Housing Authority, Site No. 9, to Bethlehem Steel Co.; Jacobson Bros. Co., Chicago, general contractor.

335 tons, Franklin D. Roosevelt Homes, St. Paul, to United States Steel Supply Co., Chicago.

450 tons, city sewage plant, Tacoma, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle;

290 tons, two permanent warehouses for Army, Fort Richardson, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., Seattle, general contractor.

208 tons, addition, Jewel Tea Co., Barrington, Ill., to Truscon Steel Co., Youngstown, O.; A. L. Jackson Co., Chicago, general contractor.

118 tons, vocational school, International Harvester Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago; B. W. Construction Co. Inc., Chicago, general contractor.

100 tons, agriculture building, South Dakota State College of Agriculture & Mechanical Arts, Brookings, S. Dak., to Hassenstein Steel Co., Sioux Falls, S. Dak.

REINFORCING BARS PENDING

3700 tons, Columbia river bridge, Wasco county, Oregon; bids to Judge W. R. Webber, The Dalles, Jan. 4.

1000 tons, shopping center, Evergreen Park, Ill.; bids in.

975 tons, No. 52, New Jersey Turnpike, concrete deck for Hackensack river bridge in Hudson county; bids Dec. 28.

650 tons, Racine avenue pumping station, Extension L, Chicago; bids in.

130 tons, reactor engineering building, Argonne National Laboratory, DuPage county, Illinois; bids in.

Unstated, four reinforced concrete buildings, Jim Creek Navy communications center, Washington state; bids to U. S. Navy, Seattle, Jan. 16.

Unstated, 1.77-mile Frenchman Hills tunnel, Columbia Basin project; United Concrete Pipe Corp. and Ralph A. Bell, Baldwin, Calif., joint low bid, $2,175,315.

PLATES . . .

PLATES PLACED

2000 tons, penstock liners, Ross dam, Seattle Skagit power project, to Consolidated Western Steel Corp., Seattle, low $1,008,653.

PIPE . . .

CAST IRON PIPE PLACED

600 tons, 6 to 12-inch, Plymouth, N. H., to Warren Pipe Co., Everett, Mass.

300 tons, 4 to 12-inch, City of Boston, to Warren Pipe Co., Everett, Mass.

200 tons, 20, 30 and 36-inch, Metropolitan District Commission, Hartford, Conn., to United States Pipe & Foundry Co., Burlington, N. J.

CAST IRON PIPE PENDING

250 tons, 6 and 8-inch, Newton, Mass.; bids in.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Missouri-Kansas-Texas, 11 diesel-electric units: Five 2250-hp passenger units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.; four 1600-hp road switching units, to Fairbanks, Morse & Co., Chicago; two 1600-hp road switching units, to American Locomotive-General Electric Companies, Schenectady, N. Y.

LOCOMOTIVES PENDING

Texas & Pacific, 34 diesel-electric locomotive units; purchase authorized.

RAILROAD CARS PLACED

Atlantic Coast Line, 18 dump cars, to Magor Car Corp., New York.

Central of Georgia, 300 fifty-ton box cars and 200 fifty-ton gondola cars, to Pullman-Standard Car Mfg. Co., Chicago, and 25 seventy-ton covered hopper cars to American Car & Foundry Co., New York.

Chicago, Indianapolis & Louisville, 50 fifty-ton flat cars, to Greenville Steel Car Co., Greenville, Pa.

Chicago, Milwaukee, St. Paul & Pacific, 42 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago.

Clinchfield, 40 seventy-ton covered hopper cars, to American Car & Foundry Co., New York.

Columbia, Newberry & Laurens, 50 fifty-ton box cars, to American Car & Foundry Co., New York.

Cuyahoga Valley, 100 seventy-ton gondola cars, to Magor Car Corp., New York.

Illinois Central, 1000 fifty-ton gondolas, to own shops; 9 dump cars, to Magor Car Corp., New York.

Norfolk Southern, 5 seventy-ton covered cement hopper cars, to American Car & Foundry Co., New York.

Seaboard Air Line, 1125 freight cars: 500 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago; 300 seventy-ton hopper cars and 300 fifty-ton high-side gondolas to Bethlehem Steel Co., Bethlehem, Pa., for construction at Sparrows Point, Md.; 25 caboose cars, to the railroad's own shops.

St. Louis Southwestern, 100 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago.

RAILROAD CARS PENDING

Grand Trunk Western, 500 fifty-ton box cars; bids asked.

FERROALLOYS

(*Continued from page* 89)

Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

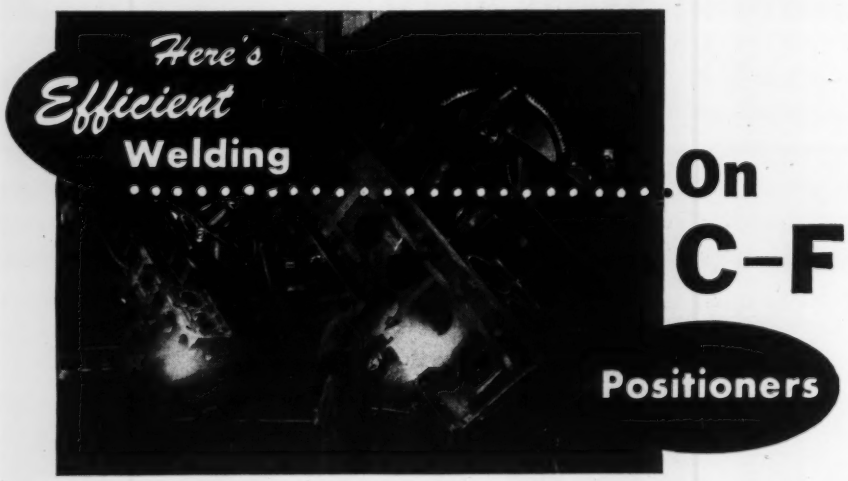
Low-Carbon Ferrochrome: (Cr 67-72%.) Contract, carload, lump, bulk, max. 0.03% C 33.60c per lb of contained Cr, 0.04% C 31.50c, 0.06% C 30.50c, 0.10% C 30.00c, 0.15% C 29.75c, 0.20% C 29.50c, 0.50% C 29.25c, 1% C 29.00c, 1.50% C 28.85c, 2% C 28.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. add 5c for each 0.25% of N above 0.75%.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk. 23.25c per lb of contained Cr, c.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, Carload, packed, 8 MxD, 16.10c per lb of alloy; 1 ton 16.95c; less ton lot, 18.15c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.00c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus



When heavy, unwieldy weldments like these diesel crank cases can be quickly swung into any position so that every weld is made downhand—that's efficient welding!

Welders spend more time welding—do better welding at lower cost when they work with C-F Positioners because these hand and/or power operated machines reduce positioning time to a minimum. Investigate the cost-saving advantages of C-F Positioners. They pay their way in any company.

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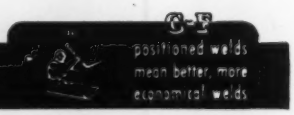


11.50c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.0c per lb of contained silicon plus aluminum, 3" x down, delivered.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium, ton lot $1.10, less ton $1.12. Delivered. Spot add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $3.25 per lb of contained W; 2000 lb W to 10,000 lb W, $3.35; less than 2000 lb W, $3.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $4.15 per lb of contained W; less than 1000 lb W, $4.25.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 19.00c per lb of contained Si; packed 20.40c; ton lot 21.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered, Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 15.55c per lb of contained Si, carload packed 16.8c, ton lot 17.8c, less ton 18.95c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 11.15c, per lb of briquet, c.l. packed 11.95c, ton lot 12.75c, less ton 13.65c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si) Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.55c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c, c.l. packed 7.7c, ton lot 8.5c, less ton 9.40c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 21.0c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.). Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.00 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3.10. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.20.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 p er lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

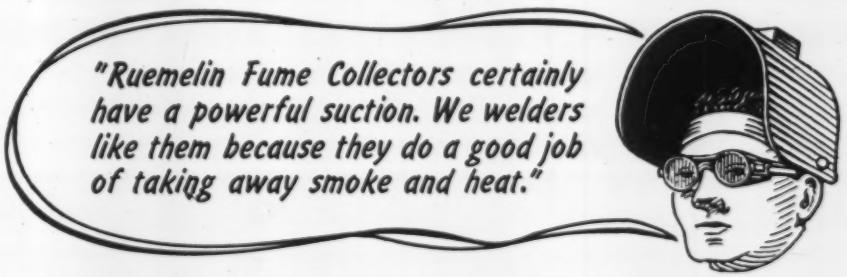
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24%, P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.32; Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.14, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.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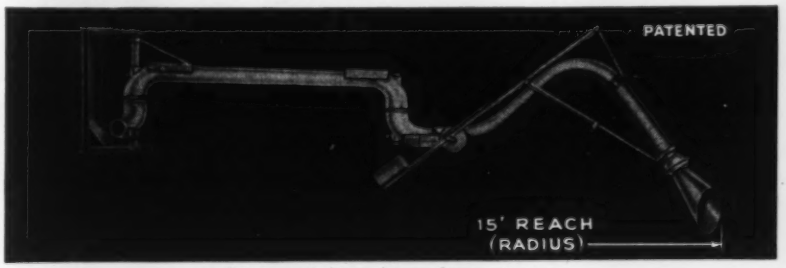
Long Reach Hinged Type Fume Collector Extends Working Range

Welding shops equipped with Ruemelin Fume Collectors enjoy a clean working atmosphere. Smoke, heat and gas are removed quickly and efficiently. Working conditions greatly improved . . . production increased. For the large welding booth, a long reach model (shown below) makes it easy to reach any welding job. 15 ft. and 18 ft. sizes. Available in wall type or underslung ceiling type brackets.

Portable models also available. Write for Fume Collector Bulletin 37-D.



Long reach hinged type fume collector

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SAND BLAST AND DUST COLLECTING EQUIPMENT
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Mill Shears, Mill Reduction Drives, Roll Lathes, Sheet Pack Carriers, Stretcher Levellers, etc.

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GRAY IRON CASTINGS

ANY SIZE

UP TO 80,000 POUNDS

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HYDE PARK, PA. **(PITTSBURGH DISTRICT)**

DIFFERENTIAL
STEEL CAR CO., FINDLAY, OHIO

Air Dump Cars, Mine Cars, Locomotives, Lorries
AXLESS Trains and
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Metalworking Briefs . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Arkansas

M. M. Tompkins, general manager and secretary-treasurer of **Allied-Arkansas Bearing Co.,** Little Rock, Ark., is recipient of the first incentive award in a contest being held by SKF Industries Inc., Philadelphia, among its industrial distributors. Mr. Tompkin's expedient was responsible for making ball bearings last for months instead of weeks in a carrier conveying alumina.

California

Chemical Division, **Kaiser Aluminum & Chemical Sales Inc.,** moved its Los Angeles sales office to 435 S. La Cienega Blvd. J. T. Putnam is district manager of the Los Angeles office.

California

J. Schwartzman Mfg. & Supply Co., North Hollywood, Calif., purchased all manufacturing equipment and facilities of Pacific Bolt Corp., Los Angeles.

Delaware

Cockshutt Plow Co. Ltd.—harvesting machinery—was chartered by the secretary of state's office, Dover, Del. Capital of the firm is listed at $100,000. U. S. Corporation Co., Dover, is serving as the principal office.

Delaware

California Steel & Tube Corp. filed a charter of incorporation with the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Delaware

Sarbacker Business Machine Co. Inc.—machinery—was chartered by the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Illinois

Chemco Products Co. Inc., Lyons, Ill., changed its name to **Peiron Corp.** The company manufactures core oils and pastes, cutting oils and rust preventives.

Illinois

Milford Rivet & Machine Co., Milford, Conn., awarded the general contract for erection of a factory building in Aurora, Ill., to William F. Lotz Co., Philadelphia. Estimated cost is $400,000.

Illinois

Lighthouse Trailer Co., Niles Ill., awarded a contract for a factory building to Klefstad Engineering Co., Chicago. Estimated cost is $450,000.

Illinois

Burgess-Norton Mfg. Co., Geneva, Ill., awarded the general contract for a $150,000 addition to its plant to Ragnar Benson Inc., Chicago. Victor L. Charm, Chicago, is the architect. Burgess-Norton is a manufacturer of automotive parts, screw machine products, sheet metal stampings, piston pins, ball bearings, etc.

Illinois

Wilbert W. Haase Co., Broadview, Ill., opened bids for construction of a burial vault factory, estimated to cost $80,000. William F. Kramer, Forest Park, Ill., is the architect.

Illinois

Marx & Lutz, architect, 2734 N. Mildred St., Chicago, took bids on the construction of a factory building in Franklin Park, Ill., for one of its clients. Estimated cost is $100,000.

Kansas

Star Mfg. Co., Oklahoma City, Okla., is erecting a plant in Turner, Kans., at an estimated cost of $250,000. Local labor is being used under separate contracts. Star produces prefabricated metal buildings.

Maryland

Armco Steel Corp., Rustless Division, Baltimore, is erecting a 1-story building, which will be used primarily for centerless grinding.

Maryland

Moldcraft Inc., Baltimore, manufacturer of steel molds for the plastic industry, dies, tools, jigs, etc., is doubling the size of its plant by erection of an addition. David H. DeVilliers is president.

Maryland

Lansdale Tube Co., subsidiary of Philco Corp., Philadelphia, will build a plant in Frederick, Md., for production of radio and television tubes. Contracts are being let for the plant. Major portion of its output will be for govern-

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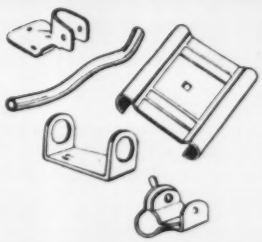

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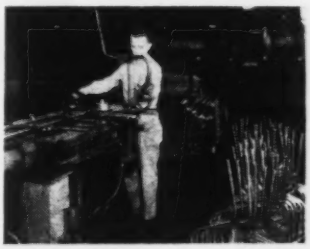

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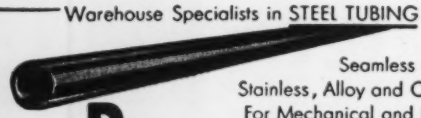

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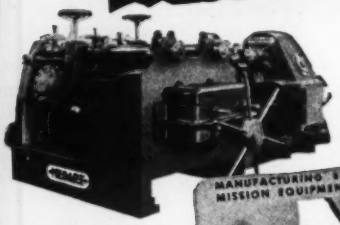

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ment requirements. Temporary quarters for the training of personnel have been leased.

Maryland

Poole Foundry & Machine Co., Woodberry, Md., manufacturer of flexible shaft couplings, reduction, cast and cut gears, etc., is doubling its office space by the erection of a building. Early this year the company completed an addition, which was equipped for manufacture.

Maryland

American Brake Shoe Co., Baltimore, brake shoes, miscellaneous grey iron castings, etc., is erecting another cupola building.

Massachusetts

Cornell-Dubilier Electric Corp., South Plainfield, N. J., moved its Brookline, Mass., plant to 292-298 Main St., Cambridge, Mass.

Missouri

Sporlan Valve Co., St. Louis, took bids on the construction of a valve factory, including a loading dock with canopy, as an addition to its present plant at Greenwood boulevard and Sussex avenue, Maplewood, Mo. Wischmeyer & Lorenz, St. Louis, is architect.

Michigan

Weldex Inc.—electric welding apparatus—moved to 2200 W. Fort at 14th St., Detroit 16. Telephone number is TAshmoo 6-7033.

Missouri

American Wire Rope Co., St. Joseph, Mo., has a construction program under way.

New York

Ward Leonard Electric Co., Mt. Vernon, N. Y., organized an Industrial Chrome Division to engage in the development and manufacture of chrome plating units, solutions and processes for industrial hard chrome plating of machine tool accessories and component parts. The company obtained an exclusive license for the manufacture and sale of the chrome plating solution and plating unit used in the process from Chromecraft Corp., Chicago. William G. Dawson is manager of the new division.

New York

Synthane Corp., Oaks, Pa., moved its New York district office to 125 Parkway Rd., Bronxville, N. Y. The company is a laminator and fabricator of thermosetting plastics for industry.

Ohio

Sefton Fibre Can Co., Maplewood, St. Louis, affiliated with Container Corp. of America, awarded a contract to Industrial Operations Inc., Indianapolis, Ind., for the designing and construction of a factory building and an office and locker building in Piqua, O. Estimated cost is in excess of $200,000.

Oklahoma

Standard Oil & Gas Co., subsidiary of Standard Oil Co. of Indiana, Chicago, plans to build a research laboratory in Tulsa, Okla. Cost is estimated at several million dollars.

Oregon

Roots-Connersville Blower Corp., Connersville, Ind., appointed Koerner Engineering & Supply Co., Portland, Oreg., as its exclusive sales agent in Oregon and Washington. Roots-Connersville manufactures rotary positive and centrifugal blowers and exhausters, cycloidal vacuum pumps, positive displacement meters, and inert gas generators.

Pennsylvania

Link-Belt Co., Chicago, is operating a new factory branch store at 5020 Centre Ave., Pittsburgh. Otto W. Werner is the Pittsburgh district manager.

Texas

International Minerals & Chemical Corp., Chicago, awarded a contract to J. R. Murphy & Co., Fort Worth, Tex., for a chemical fertilizer plant. Sturtevant Mill Co., Boston, will supply equipment for the plant; Barber-Greene, Aurora, Ill., will install the conveyor system.

Texas

Simmons Co.—steel bedsteads, springs and mattresses—New York, plans to build a factory at the corner of Hines boulevard and Burbank street, Dallas, at an estimated cost of $1.5 million, including site, building, equipment and machinery. W. C. Gipe is the southwestern district sales manager.

West Virginia

James J. Weiler & Sons Inc.—structural steel—Huntington, W. Va., plans an expansion program which will include some new machines and equipment.

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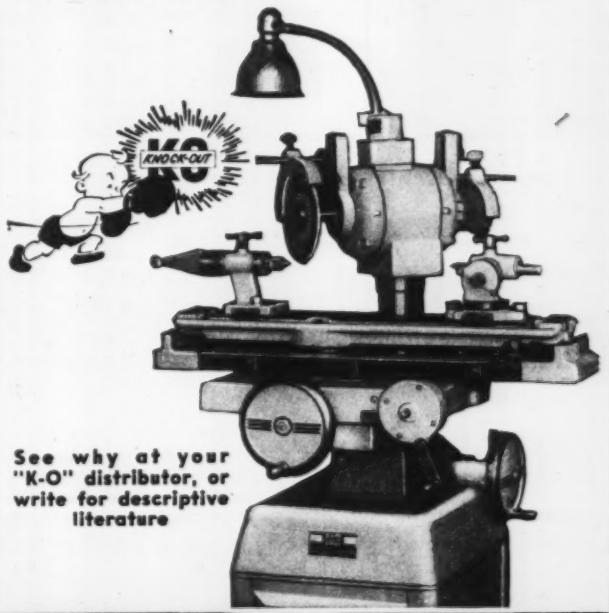

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"File card" for steel makers

Suppose you, as a manufacturer, wanted to make sure that the steel you ordered today was exactly the same as the steel you ordered months ago, or years ago...

If you are a customer of Kaiser Steel, you have a "file card" similar to the one above... a small ingot of steel taken from every "pour" and kept with its specifications as a permanent record.

This is only one of many scientific methods employed by Kaiser Steel to make sure your needs are met precisely and to assure consistently uniform quality.

Such painstaking care is another reason why the West's only integrated *independent* steel plant is bringing more industry, more jobs, more wealth to the West!

It's good business to do business with

Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled sheet • alloy bars carbon bars • structural shapes • cold rolled strip • cold rolled sheet • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

If it's made of iron or steel, and exposed to the elements, remember to have it Hot-Dip Galvanized—*sealed in zinc!*

HANLON-GREGORY
Galvanizing Company
pittsburgh...pennsylvania

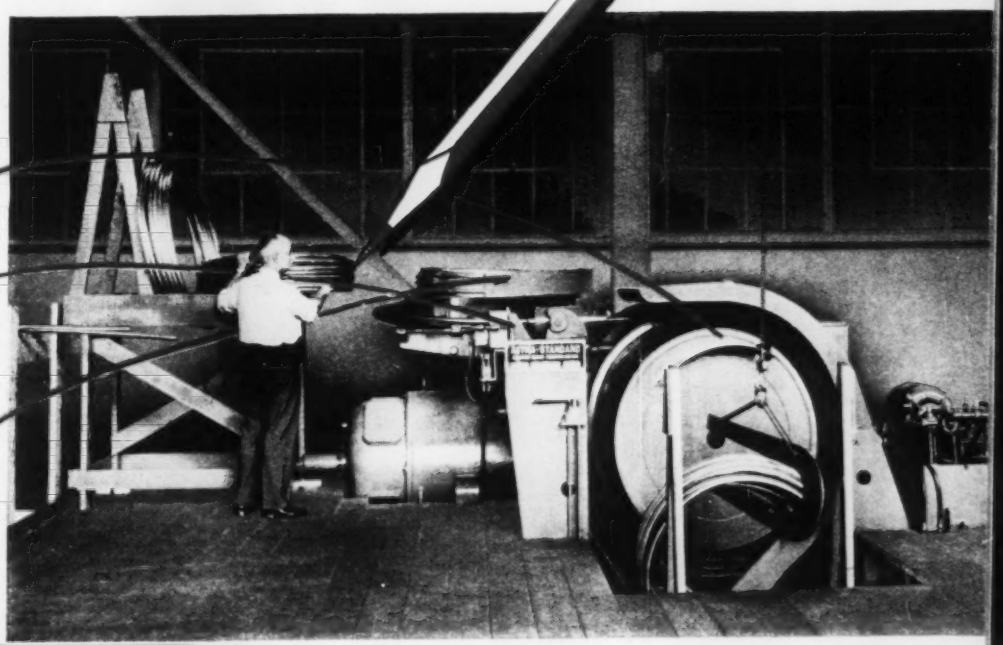
the world's largest job galvanizing plant

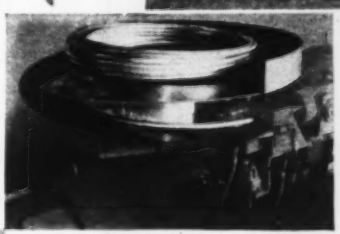
in the heart of the STEEL INDUSTRY

HOT DIP

galvanizing....pickling....painting....oiling

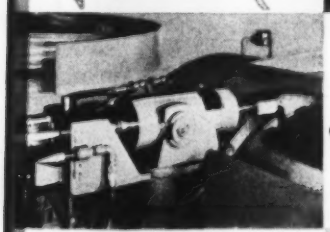
NEW! horizontal Bull Block for Tube drawing...





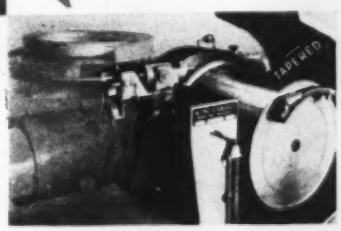
Coil Payoff

To facilitate handling of tubing at the entry end, Aetna equips the machine with a coil payoff of special design. The unit is integral with the Bull Block.



Shear Push Pointer and Die Block

Shear cuts off trailing end of tube during drawing operation . . . without stopping block. Hydraulic push pointer with integral die box points tubing just prior to drawing. Use of push pointer and shear eliminates manual handling of coil between draws.



Coil Unloading

To eliminate need of coil push-off, the Bull Block is equipped with a tapered drum. When draw is complete, the tapered design enables operator to unload coil with ease.

This Bull Block has a distinct production advantage—continuous operation. The push pointer and the shears, integral in the unit, point and crop material in motion. No stopping or starting until cycle has been completed.

Note these other features of the new Aetna Bull Block:

- Improved handling of tubing up to and away from the Bull Block.
- Draw from either straight tubing or coils.
- Circulating lubricating unit provides continuous lubrication at the die.
- Simplified design lowers original cost and insures low maintenance.
- Standard equipment includes crop shear and push pointer.

Aetna-Standard designs and builds high production equipment for tube drawing from billet to finished tube, including Piercing Mills, Hydraulic Squeeze Pointers, Drawbenches and Bull Blocks. Call on Aetna-Standard's specialists.

Only completely equipped one man Bull Block available

aetna-standard

THE AETNA-STANDARD ENGINEERING COMPANY · YOUNGSTOWN, OHIO

Plants in Warren, Ohio · Ellwood City, Pennsylvania

ASSOCIATED COMPANIES

Head Wrightson Machine Company, Ltd., Middlesbrough, England—Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.

Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y.—Mexico, Central and South America.

Societe de Constructions de Montbard, Paris, France—France, Belgium, Holland, Luxembourg, Switzerland.

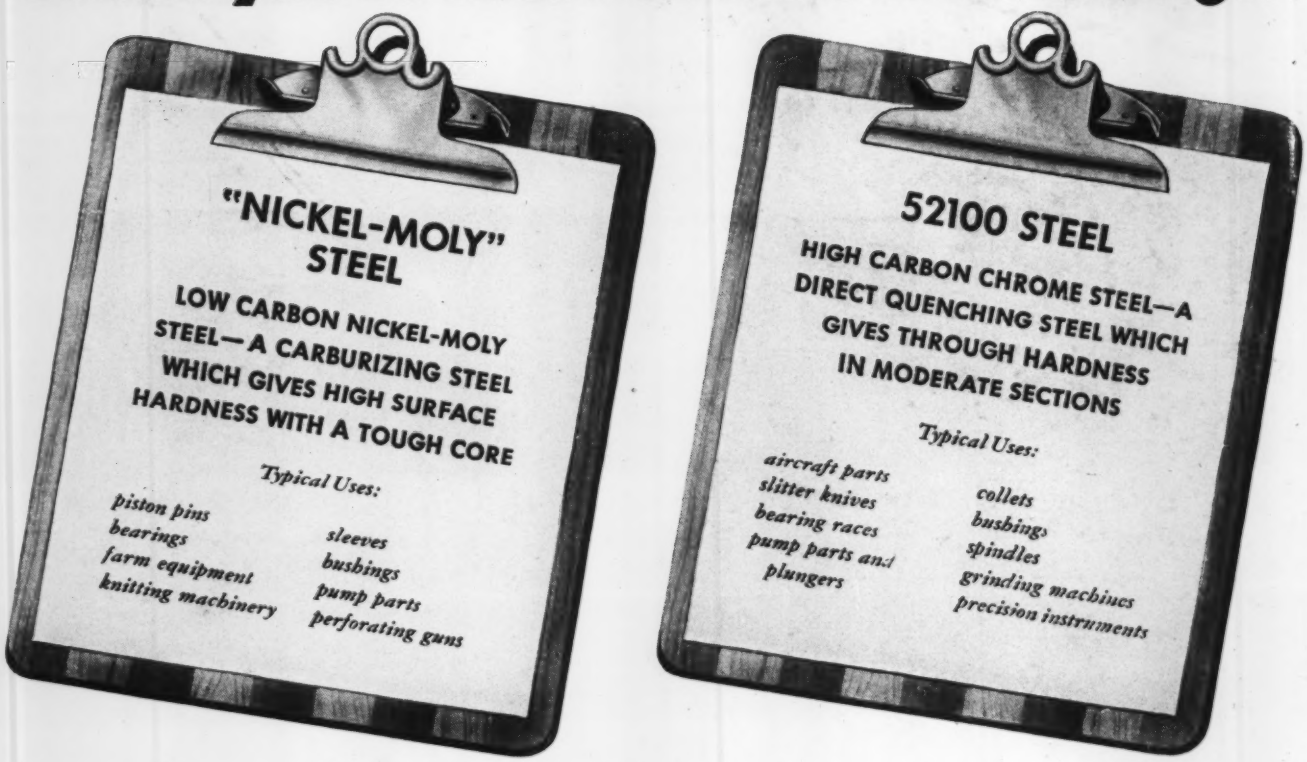
Compagnia Italiana Forme Acciaio, Milano, Italy—Italy.

Aetna-Japan Company, Ltd., Tokyo, Japan—Japan.

Hale & Kulgren, Inc., Akron, Ohio—Representative for the Rubber Industry.

Designers and Builders to the Ferrous, Non-Ferrous, Leather and Rubber Industries

When you're short of time and tubing...



these 2 TIMKEN® wear-resistant steels will do 90% of your hollow parts jobs

YOU CAN GET DELIVERY NOW FROM WAREHOUSE STOCK!

If you need warehouse quantities of steel tubing and you need it in a hurry, use Timken® 52100 or Timken "Nickel-Moly". They'll do nine out of ten of your hollow parts jobs. And they're available for immediate delivery from warehouse stocks!

52100 is a high carbon steel that can be heat treated to file hardness and tempered back to any desired point. It is through-hardening in moderate sections. 52100 has high wear resistance and can often be used in place of more expensive steels.

"Nickel-Moly" gives you exceptional stamina and shock absorbing qualities. It is a low carbon, carburizing steel that develops high case hardness and a tough inner core.

With both of these Timken steels, you're assured of uniformity from tube to tube and shipment to shipment. Every step in their manufacture is rigidly controlled in the Timken Company's own mills. 52100 can be supplied in 101 sizes, ranging from 1″ to 10½″ O.D. "Nickel-Moly" is available in 52 sizes, from 1.389″ to 10.223″ O.D. For free stock lists, write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

Specialists in alloy steel—including hot rolled and cold finished alloy steel bars—a complete range of stainless, graphitic and standard tool analyses—and alloy and stainless seamless steel tubing